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AMERICAN

VETERINARY REVIEW.

EDITED MONTHLY BY

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141 WEST 54TH STREET, NEW YORK,

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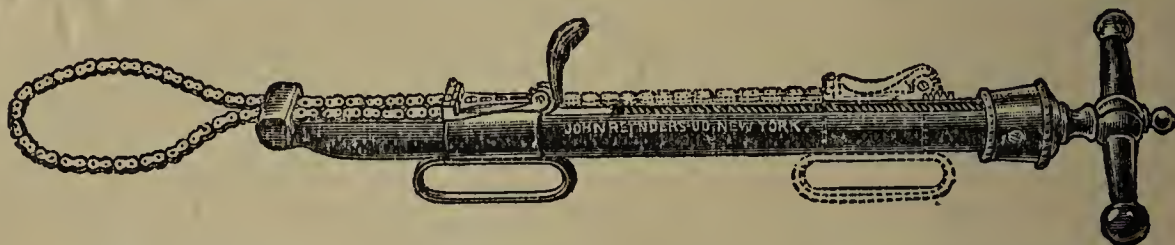
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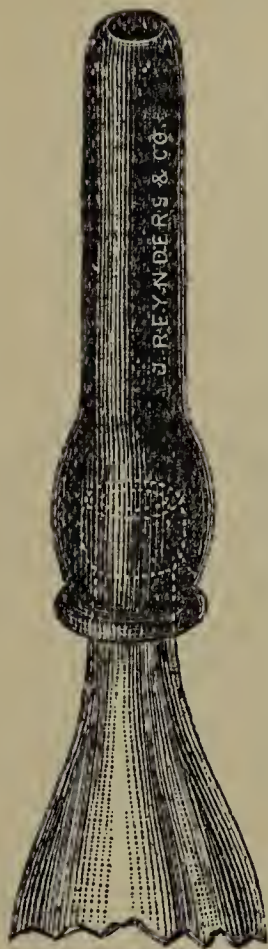
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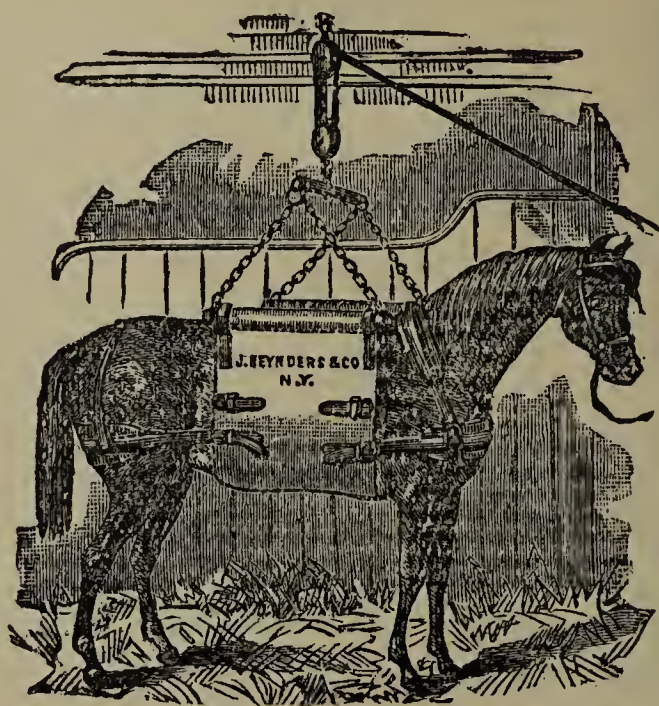
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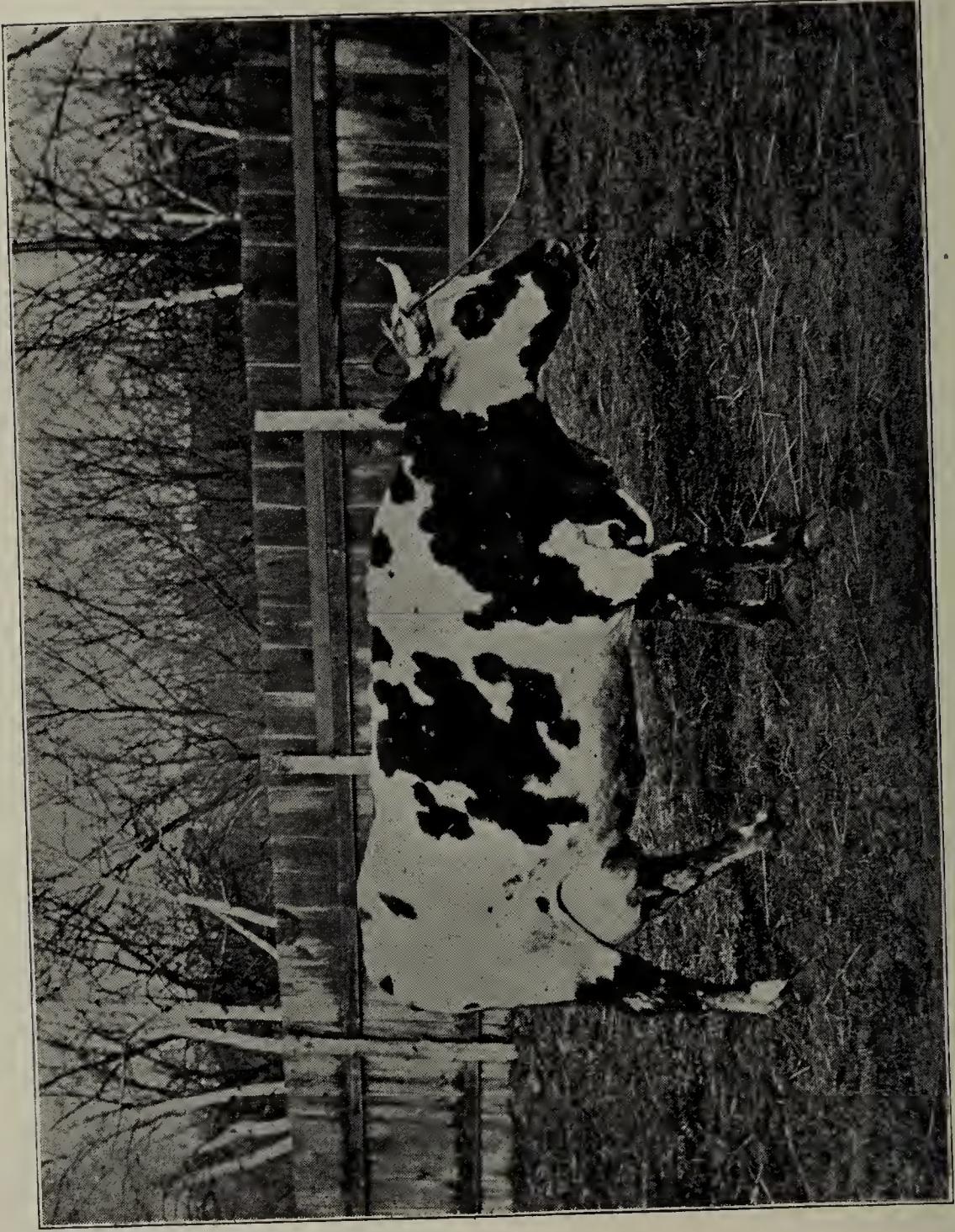
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AMERICAN VETERINARY REVIEW,

APRIL AND MAY, 1895.

NOTICE.—Please address all communications regarding matter for publication, books for review, exchanges, etc., to the Editor, 139 and 141 W. 54th St., New York.

EDITORIAL.

AN EXPLANATION.—Since 18 years that the REVIEW has been trusted to our care it has been our endeavor to make it the veterinary journal of this country: and we thought that we had well succeeded in our efforts and to such an extent, that two years ago, with the desire to secure for her a prospective, permanent and greater life we decided to place it in the hands of a publishing house, whose prospective of success was considered at that time beyond possibility of failure.

Unfortunately our expectations were not realized, and at the time when sudden fall threatening that firm came, to protect our friends and those who for years had by their subscriptions helped us on our work, we decided to notify them that we had resigned our position as Editor.

When this notice was sent, we were not able to state whether this step was merely temporary or permanent. We were however in hopes to once again become sole owner of the management of the journal and it is with much pleasure that we can announce,

3-40-95

that after great sacrifices that we have once again resumed our line of work as editor and publisher, with the additions of valuable assistants and collaborators.

It is therefore in issuing the double number of April and May, the firsts of the nineteenth volume, that we express the hope that the little interruption and the delay, which has occurred, will be overlooked and that we have to look towards our correspondents to return to us and send us communications as in the past.

That no efforts will be spared on our parts to make the REVIEW what it has always been, that every reason of complaints which have been so well justified during the last few months, will be avoided, are promises that our past mode of doing renders unnecessary.

Subscribers will do us a great favor in notifying us of their desires to continue their contributions and also inform us of what reclamations they may have to make. The bureau of redaction and publication will do its best to satisfy every one, as much and as rapidly as it will be in our power.

NORMAN BREED OF CATTLE.—We have already presented that subject in previous issues, and we feel so interested in the importance of the subject, that once again we have to return to it.

It is no easy matter to introduce a new thing, no matter how good it may be, but the result can be considered much easier when the object in view possesses superior qualities, and that those can be fully examined into and readily recognized by those who are most interested in it.

Who can be benefited by the introduction of the Cotentin cows in the United States? All who are interested in the dairy products. And whether it is the private individual who owns but one cow, or those who have large herds, and deal with its milk and its butter, it is the same. But that is not sufficient. Some who know what must be the qualities of the cow or of the steer, are the ones who can call the attention of the public to these qualities. And when such authorities as the *American*

Agriculturist write the following article in their excellent journal, it is a question whether our claim for it is necessary.

This, we reproduce from the issue of April 27th :

We have received an excellent communication on the same subject from one of our best zootechnicians, which we are obliged to defer to our next publication.

NORMAN OR COTENTIN CATTLE.

Among the recent arrivals at the port of New York was that of twelve head of Norman cattle, owned by Mr. J. B. Guillot. They were at once taken—as all foreign cattle arriving there must be, under existing laws—to the United States quarantine station, at Garfield, N. J., where they will remain until they have completed the legal detention of ninety days. The Norman, although it is one of the oldest existing races of domesticated cattle, is very little known in the United States, but few of them having ever been imported previous to this recent arrival. The leading characteristics of Norman cattle are great size, with rather coarse bone, long and heavy head, fine horns,—usually bent forward and downward,—long deep body, broad hips, short legs, thick and rather hard skin, well covered with a coat of various shades of red, white, roan and reddish brown in spots, and brindled streaks. The cows have well-developed milk veins, and large, well-formed udders. It is claimed for them by Norman farmers that they are the best dairy cows in the world, and they unquestionably hold the leading position among French breeds of cattle. Twenty-five to thirty quarts of milk a day is not an unusual yield for a Norman cow in full flush, and is sometimes considerably exceeded, while 6,000 pounds within a year is not above the average. It is mainly from their milk that the famous Camembert and Brie cheeses are made. The butter, known in Paris under the trade name of *beurre d'Isigny*, commands the highest prices at the semi-weekly auction sales of the Halles Centrales, the great market place of the French capital. As beef animals, Norman cattle are noted for early maturity and great weight rather than large net weight of dressed carcass. Cows which have served their purpose in the dairy are fattened until they attain weights of 1,200 to 1,800 pounds. Steers at ages of two and a half to three years weigh from 1,600 to 2,000 lbs., and there are authentic records of Norman oxen which at six years of age weighed 4,185 to 4,335 lbs. This “general-purpose” quality is of great importance to the small proprietors of France, as it enables them to turn to profitable account their “dowager” cows and surplus mules. The beef is of good quality, but there is a larger proportion of bone and offal than in the British breeds of beef cattle. They are heavy eaters, and require an abundance of nutritious food. The strongest claim to public favor made in behalf of this breed is on the ground of its hardiness and freedom from all tuberculous taint. In Normandy great numbers of these cattle are kept in thriving condition without shelter, winter and summer throughout the year.

The habitat of Norman cattle comprises the departments of Eure, Calvados, Manche and Orne. Its origin is lost in the midst of ages. An evidence of its great antiquity is the fact that the Bayeux tapestry, wrought in the eleventh century under

the direction of Matilda, the queen of William the Conqueror, the cattle represented are fairly good portraits of Norman cattle as they are seen to-day. Great care has been taken to preserve the purity of the race, and to this end a herdbook was established in 1883, and is still maintained. It is entitled the "Herdbook d'Isigny et du Bessin," and is edited and published under the charge of a commission elected for three years by the Société d'Agriculture. This commission consists of eighteen members of the society, assisted by three veterinarians, and every animal must undergo a rigid inspection before it can be admitted to registry.

The importation of a breeding herd of Norman cattle is an event which may prove to be of some importance to American live-stock interests. This land of cheap and abundant food material would seem to be the very place for these gross feeders, with their immense capacity for turning grain and forage into milk and beef. If they sustain the claims made for them, and prove to be adapted to American conditions of soil and climate, they can scarcely fail to be a valuable acquisition.

VETERINARY LEGISLATION IN NEW YORK STATE.—Of all the states in the country there is probably none where veterinary legislation receives more attention.

The legislature this time has had quite a number of bills presented—First one, fathered, we understand, by the New York State Veterinary Society, relates to Veterinary Education in the State—What will be the result of the efforts made by the friends of the bill, we cannot yet tell. The proposed measure is full of good suggestions and of good points, but is not probably yet what is wanted. The profession may be prepared for it. Some say yes, others say no; and amongst those must be found the friends of a second bill, introduced to extend the time of registration. All friends of advancement and regulation of Veterinary practice will be pleased to hear that the measure has been killed and it is to be hoped will never be revived.

A third bill found its way in the Legislature—recommended by the Societies of the State; it has for its object the exemption of Veterinarians from jury duty. An *unanimous* vote of the bill in both houses have brought it before the Governor of the State for his signature.

As the measure has passed and has become a law, the Veterinary profession has reached one step higher in the ranks of professional standing and it is but justice to say that to Dr. Arthur O'Shea the credit is due of having been the main de-

fensor of the bill. He may have received assistance here and there, but we know it is he who, leaving aside all personal interest, has neglected not one stone to be turned, not one occasion to defend the bill and we believe that had it not been for him we could not congratulate ourselves as we do. Dr. O'Shea deserves well of the profession.

SIXTH INTERNATIONAL CONGRESS OF VETERINARY MEDICINE.—We can only give notice, for the present, of this future event and intend to call the attention of our readers to it in our next issue.

Let us say only that the programme arranged is most complete and cannot fail to attract to Berne a large number of Veterinarians.

The congress will hold its meetings from the 16th to the 21st of September.

MAINE APPRECIATION OF VETERINARY MEDICINE.—Among our sundry news we printed some time ago an item from a Portland paper on what any man, we thought, would consider an idiotic cruelty,—it seems that we had a wrong impression of what cruelty is,—and that after all years of study have not made us any wiser. Colics, of what nature they may be, what might cause them, can now by order of a Portland court be treated by what we, wrongly or rightly, may consider the most absurd, if not at heart, cruel treatment, the pouring of some liniment in the patient's ear. If this is done, the fluid will flow from the ear to the seat of disease and . . . it is believed by a few that veterinary medicine has progressed in the last twenty-five years.

Will not our friend, Dr. G. Bailey, tell us if the report which he has sent us, and which we reprint, is not a joke, and if legislative action for the practice of veterinary medicine in Maine is not at an early date going to prevent the return of such a disgraceful act and approval from an *intelligent* jury?

ORIGINAL ARTICLES.

GLANDERS.

By W. L. WILLIAMS, V. S., Bozeman, Montana.

A review and extract from his article in Bulletin No. 4 of the Montana Agricultural Station.

Through the kind permission of Dr. Williams, veterinarian at the Montana Agricultural Station, we present to our readers a series of plates illustrating the lesions of the septum nasi in cases of glanders in various stages. These were published in bulletin No. 4 of the Station, which appeared some time ago, in which Dr. Williams wrote a very long article on the disease, in which he reviewed the entire subject of glanders, probably more for the benefit of horse owners in Montana but where no doubt, veterinarians would find much matter of interest.

It is in this way that after a kind of review of the general history of glanders and fancy and of the cause, the *bacillus malleus*, he enters into the pathology and the description of the symptoms, for the illustration of which he uses the plates he so kindly sent to us: and these are followed by the careful consideration of the influences which modify the manifestations and the characters of the disease.

EXPLANATION OF ILLUSTRATIONS.

FIG. I.—Nasal partition from an aged Montana mare said to have been glandered four or five years, during which time she had shown slight discharge from the right nostril and considerable swelling of right submaxillary gland. Otherwise she appeared in good health.

a. Recent glander ulcers, with ragged, ulcerating edges.

q. Old ulcerated patch which has healed, leaving a wrinkled scar. The reverse side of this septum, which is healthy, represented in Fig. IV.

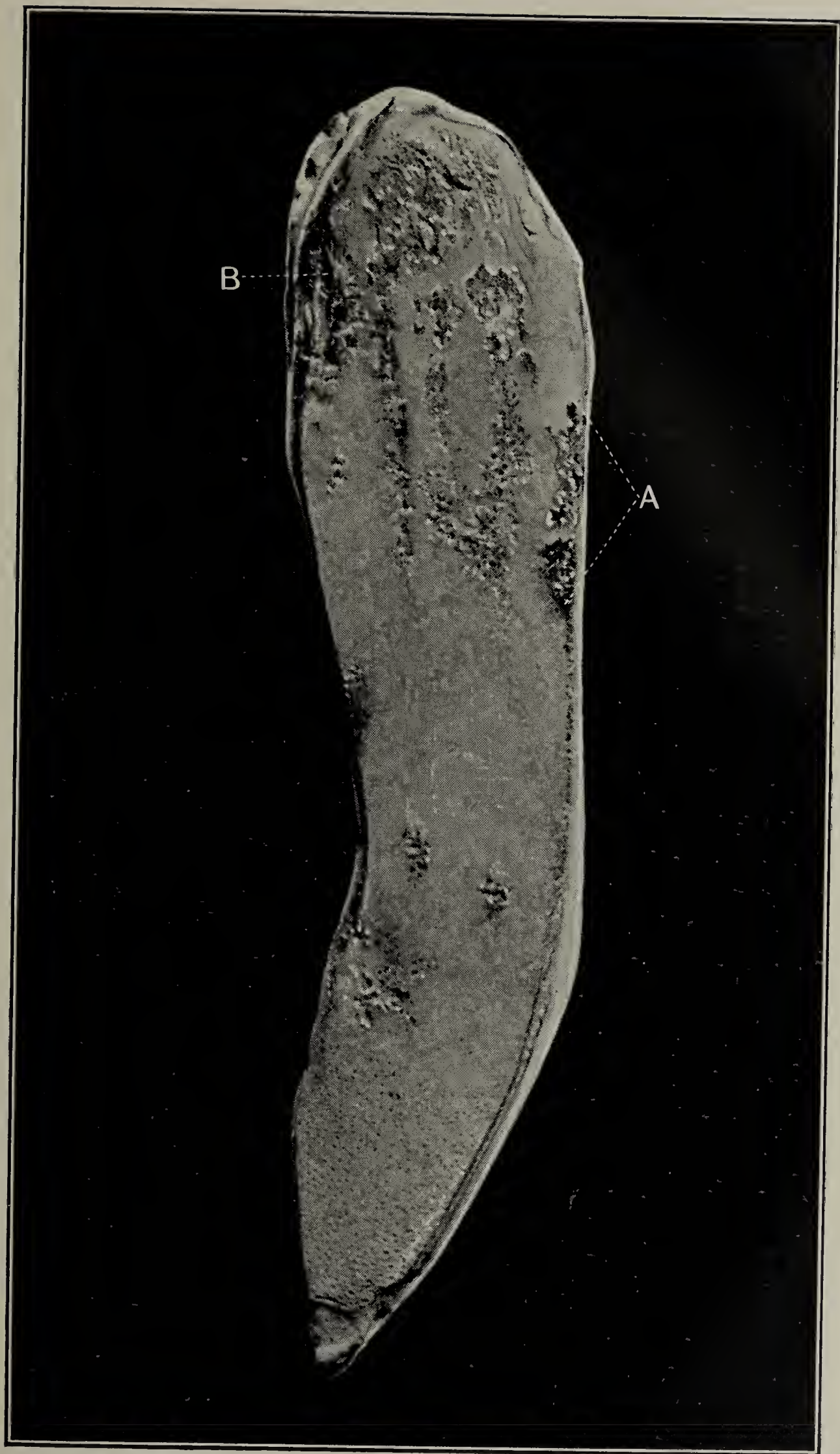


FIG. I.

FIG. II.—1. A portion of one of the turbinated bones, and 2, the nasal partition from a 3-year-old Illinois filly affected with glanders about one year. At A in 1 are seen several solitary glanders ulcers. The entire surface of 2 has been destroyed by the confluence (running together) of innumerable ulcers which at B have penetrated so deeply that they have pierced the septum from side to side so that a man's finger could be passed through the partition from one nostril into the other. At A is seen an old adhesive band, the result of glanders ulceration, which united the nasal partition to the outer nostril wall. The septum shows throughout, a tendency to heal.

FIG. III.—Nasal partition from an aged Montana gelding, kept mostly on the range, at times worked upon a farm, said to have been affected for four or five years, his mate being more severely affected during the same period. At A are seen three small ulcers, and at B a dark colored but otherwise apparently healthy spot the nature of which is unknown. No scars from previous ulceration are to be found, doubtless because they, like those seen at A, have all been small and very superficial.

FIG. IV.—The left side of Fig I, showing the appearance of a healthy septum, or nose partition,

FIG. V.—Nasal partition from a 3-year-old Montana farm gelding, affected with acute glanders for a few weeks. Both sides were affected alike, the entire surface of the partition being one continuous mass of ulcerating, sloughing tissues, the gangrene or death of the parts, extending deeply at A so that had the animal lived a few weeks longer the partition would have been perforated as in Fig II.

FIG. VI.—Nasal partition from an aged Illinois gelding affected with acute glanders of a few months. From A to A along center of partition is one continuous ulcerating patch, while on either side are smaller ulcerating patches interspersed with healthy patches. Opposite side is wholly free from ulceration.

FIG. VI.—Nasal partition from a 4-year-old Montana farm gelding, affected with glanders about one year. At A are shown, two large wrinkled scars, the seat of the former ulcerating patches. At B are seen several recent ulcers.

Under the heading of Climates, among those influences Dr. Williams says:

CLIMATE.

“Of all conditions of affecting glanders, climate exerts the most notable influence, rendering the horses of some countries almost wholly exempt, while those of other countries suffer extensively and severely. The disease has been for many years extensive and severe throughout central and northern Europe, and Great Britain, Although having a large number of horses the Australian continent is said to be free from the disease, no outbreak having thus far being recorded, although it is scarcely possible that no animals affected with glanders have been imported to that country.

In British India * the disease has at times been extensively imported but was readily eradicated and native animals appear immune.

In Southern Russia and in Roumania and Italy, glanders is very prevalent. Prof. V. Babes of Bucharest, Roumania, from careful investigation estimates that 30 per cent. to 50 per cent. of the horses in that and in other Roumanian cities are affected with glanders, but in a very mild form, generally showing no external signs, and frequently recovering spontaneously. In south Russia and in Italy the disease appears little less common than in Roumania and assumes a like mild type with frequent recovery either spontaneously or with treatment. It also prevails in Africa and in north China.

The immunity of horses against glanders in Australia and British India is, so far as can be seen, referable almost wholly to climatic influences, chiefly to the light rain fall, regular temperature, the dry atmosphere, and similar conditions serve to

*Fleming's Veterinary Science and Police, Vol. I. P. 479.

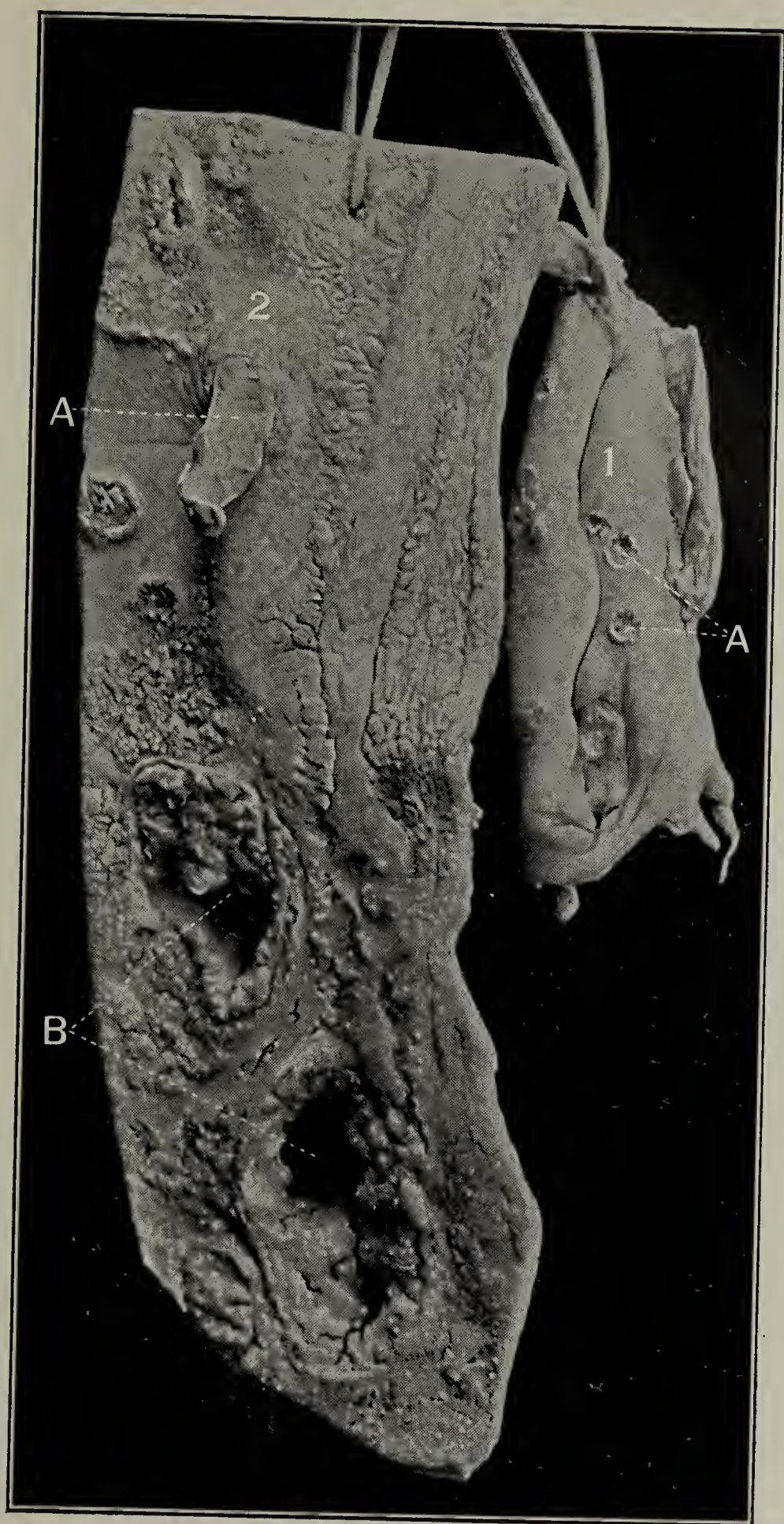


FIG. II.

render the disease unusually mild, permitting many of the animals to recover in southern Russia, Roumania and Italy.

These influences are very marked also in America. In Mexico, glanders occurs rarely, is not inclined to spread and runs a very mild course.

In the United States we find marked variations in different localities.

In the Atlantic, Gulf and Mississippi Valley States the disease prevails to a considerable extent and in rather severe form.

Even in those states however, three-fourths or more of the horses have the disease in the mild or chronic form, so that they will live for several months or even years, while some of the affected horses will remain fat and vigorous, and perform ordinary work without difficulty for several years, and occasionally they apparently recover, although as a rule still capable of transmitting the disease. A smaller number of the diseased animals in these states are affected in the severe form, the affection running a rapid course, ending in death in from 15 to 60 days.

As we approach the high plains sloping eastward from the Rocky Mountains the disease, although quite common, is very mild and the acute or severe type is seldom witnessed, most affected animals living for months and even years in good condition.

In the higher altitudes of the Rocky Mountains and along their western slope the disease assumes a still more mild type, being very rarely seen in the severe form, but usually of a very mild character which under favorable surroundings does not materially affect the vigor of the animal even though at a reasonable labor, so that the lives of most affected horses are not shortened greatly if at all by the disease but generally live for an indefinite number of years, while many diseased animals show no external symptoms whatever, and many horses at one time plainly affected with glanders make apparent recoveries and remain to all appearances sound for years.

When however, the weather is inclement, stormy and wet

the disease tends to develop in the severe form as was seen in Montana during the fall, winter and spring of 1893-94, but upon the advent of summer with the usual dry weather the acute form disappeared and the disease is rarely reported, not because it is less rare but because it assumes largely a type which is unrecognizable.

When the Pacific coast is reached glanders re-appears in the humid localities near the sea level in its severe form, and runs the same course, with like symptoms as seen in the Atlantic states.

Since the disease is due to the transmission of glanders germs usually contained in the discharge from the nostrils or from farcy buds of affected animals to those which are healthy, and since as a rule the glanders germs are most abundant and active in severe cases, it naturally follows that the contagiousness of the disease is in proportion to the severity it assumes in the animal to which the healthy one is exposed, hence the disease is most contagious under those conditions which make it most severe in the affected animals and least contagious where it assumes a very mild type.

Thus we find the disease highly contagious under one set of conditions, and very feebly contagious under others."

Then the stabling, labor, food, breed and age are considered.

The special and the differential diagnosis is there presented and nasal gleet, strangles, pink-eye, acute nasal catarrh, infectious or epizootic catarrhal fever, chronic nasal catarrh, disease of the facial sinuses, diseased teeth, tumors in nostrils, received proper attention.

In connection with the diagnosis by other than physical signs, we extract as of great interest to American Veterinarians the following relating to the use of Malleine and inoculation."

DIAGNOSIS BY OTHER THAN PHYSICAL SIGNS.

"It being so often utterly impossible to detect the existence of glanders in an animal by any of the signs heretofore described many other means have been devised and tried in order to determine if suspected animals be affected with glanders or not.



FIG. III.

Finding early that the disease was transmissible to other animals by means of inoculation with the discharges from suspected animals, this means of arriving at a safe diagnosis suggested itself and considerable study was spent upon this subject in an effort to render this process reliable and convenient. Horses were tried as test animals but in these it was found unreliable, many of them being quite refractory to the disease, and in addition to the want of reliability the experiment animals proved too expensive.

Asses and mules were also tried, they being more susceptible to the glanders poison than horses, but these animals although somewhat more reliable were more difficult to obtain in many places and their value tended to prohibit their use. Then followed a long series of experiments with smaller animals including guinea pigs, rabbits, rats, mice and others, some of which responded promptly to the inoculation and appear to have yielded some practical results.

But in general the process proved unsatisfactory and troublesome delaying action in regard to suspected cases until the experimental inoculation had been tried, and besides, the inoculation was not practicable or convenient in most hands.

Even had inoculation in itself proven reliable, there are many cases of glanders in which there is no nasal or other discharge from which material can be obtained from the living animal for inoculation while it was found that in very mild cases of glanders the nasal discharges were very unreliable and produced the disease in comparatively few experiment animals.

The study of the pathological anatomy or structure of the diseased parts by Virchow, in 1855, gave new hopes of a basis for the safe diagnosis of suspected cases and it was attempted to practically diagnose the disease in the living animal by a microscopical examination of the enlarged lymphatic glands from between the jaws. Such means, however, were not available to most veterinarians and being rather impracticable generally, never came into common use.

The observations of Turn, Hallier and others in 1868 and the

following years, in which they found in the blood and other parts of the body, a living bacillus, which was finally fully identified and proven as the sole cause of glanders by Loeffler and Schutz, in 1886, gave the hope that microscopical examination of discharges or diseased tissues for the glanders bacilli, would prove a very valuable means for diagnosing obscure cases, but the mild ones, those for which some reliable test was desired, furnished comparatively few of the bacilli, rendering their detection very difficult and, besides, only a very few persons were capable of making a reliable microscopical diagnosis. The next and crowning discovery in relation to the diagnosis of glanders, based upon the discovery of the glanders bacillus of Loeffler and Schutz and suggested by the discovery of tuberculin by Dr. Kock was the discovery and preparation by Kalning and Helman of Russia, in 1891, of the product of the glanders bacillus known as mallein. This substance represents the poisonous products given off or formed during the growth of the glanders bacilli and is prepared by growing the germs artificially on potatoes, beef bouillon or other culture material and when the bacilli are well developed they are separated from the fluid by filtering and the fluid containing the poisons generated by the germs is then heated repeatedly to a temperature of about 120°C (248°F) and is either retained securely sealed in liquid form or is precipitated by means of alcohol and dried (dry mallein).

This substance when injected in proper amount into the system of a horse affected with glanders causes in a few hours (5 to 16) a marked rise in temperature, or fever, amounting usually to 2°C (4°F) or more, above the normal body temperature.

In acute or severe glanders we already have an elevation of temperature and in these we in some cases find no marked reaction but they are easily diagnosed without the aid of mallein, in the mild chronic cases we usually find no fever whatever, and it is in these we need the aid of mallein in arriving at a safe conclusion.

Our present knowledge of disease indicates that in glanders the bacilli themselves are not the cause of the chief symptoms in



FIG. IV.

the acute or severe cases, but that they multiply in the blood and tissues to such a degree that the poisonous waste products given off by them, unless promptly thrown out of the system or destroyed, produce fever and other general symptoms of disease.

In the mild or chronic form of glanders these germ poisons are not formed so rapidly and the system soon becomes so accustomed to their presence and the means necessary for their removal, that they are carried from the body before they produce any change in the body temperature.

If then we add to the amount of this poison which the animal body is accustomed to handle and throw out without difficulty a small amount of artificially prepared mallein we create such a disturbance in the system of the animal as to cause the temperature to increase several degrees above the natural body heat, accompanied by usual symptoms of fever and aggravating for a time all the symptoms of glanders.

During the short time since the discovery of mallein it has been tested by leading scientific veterinarians in every part of the world, and, so far as I have been able to find, no investigator has condemned it, but all unite in asserting that its use has at least furnished us with an agent by which we can readily and safely diagnosis the disease, not alone in suspected cases, but in those animals where the most careful physical examination can detect no signs of disease.

Mallein has proven so reliable that it has received governmental recognition in many European countries and its use officially advised or commanded.

In cavalry regiments where glanders had broken out, the use of mallein on all exposed horses was made obligatory in Germany and Belguim in 1892 and France in 1893. During the present year (1894) the use of mallein has been made obligatory in Switzerland in all horses, mules and asses, in stables or establishments where glanders has occurred, and in all cases of suspected glanders; and in all cases where the use of mallein is followed by a well marked fever and other characteristic results

of the mallien test, the animal is destroyed after having been appraised.

The reaction or symptoms produced by mallein in glandered animals are well marked and highly characteristic. Preparatory to the test the temperature of the suspected animal is taken two or three times during the day prior to the trial, and a record of the temperature is again made at the time of injecting the mallein. The proper dose of mallein is then injected beneath the skin, usually along the neck, by means of an inoculating or hypodermic syringe. The spot where the injection is made is first cleansed by washing with a solution of corrosive sublimate or other anteseptic liquid and the needle of the syringe is carefully disinfected by immersing in such a solution or holding in a hot flame for a moment, until any forms of bacterial life which may exist in the needle are safely destroyed. These precautions are taken to render it certain that nothing but the pure mallein is introduced beneath the skin thus avoiding the danger of complicating or rendering valueless the trial. Subsequent to the injection the temperature of the animal is taken every two hours for twenty-four hours, and careful record is kept of each measurement.

In animals suffering from glanders even in a mild degree, showing no outward signs, the temperature usually shows no particular change after the injection until after a lapse of five to eight hours and sometimes longer, when it suddenly rises as much as two, three or more degrees centigrade, above the normal body temperature, the highest point being usually reached eight to sixteen hours and sometimes later after the injection, after which the temperature slowly falls, reaching the normal again in twenty-four to thirty-six hours, or longer.

At the point where the mallein is injected the glandered animal usually shows a very considerable painful swelling, in many cases the animal becomes chilly as shown by shivering, the general appearance dull, the hair rough, appetite is lost, and in some cases any existing symptoms of glanders are aggravated, the nasal discharge if present before, may become in-



FIG. V.

creased, the glands more swollen and the ulcerations in the nostrils may increase in size and number. In other instances as will be seen later, especially in mild cases, no such evidence of increased disease action occurs. On the other hand animals free from glanders show none of the above symptoms in a marked degree after mallein injection, the temperature rarely increasing one degree C, if at all, the swelling at point of injection being small, soft, and not very painful to the touch, while the appetite and general appearance remain unaffected.

Other diseases than glanders do not affect the action of mallein, and it has been used on animals, affected with distemper (or strangles), disease of the cavities of the face with abundant nasal discharge, botryomycosis (a disease similar to lumpy jaw of cattle, affecting at times the legs of horses like farcy) and other diseases resembling glanders, but in all cases the injection produced none of the results found in that malady.

Again it has been suggested that other substances of a similiar character, such as tuberculin (the product of the bacillus tuberculosis or consumption germ) might produce the same results when injected into the system of a glandered horse, but experiments with tuberculin at least, contradict this view.

District Veterinarian Walther * of Saxony injected beneath the skin of each of three glandered horses 0.3 c. c. each of tuberculin without producing a reaction while a like amount of the same tuberculin used upon a tuberculous cow produced the typical fever.

In rare cases the use of mallein on animals free from glanders has produced a decided elevation of temperature but not in the typical manner, for while in cases of glanders the fever usually reaches its highest point in from eight to twelve or rarely sixteen hours, in these rare cases of fever in animals free from glanders the high temperature is not generally reached until nearly or even more than twenty-four hours after its use. In cases of doubt where the elevation of temperature is clear, yet

*Deutsche Zeitschrift fur Thiermedizin, Vol. XIX, p. 173.

not so great as to clearly indicate glanders, a second or third trial may be necessary to determine if glanders exists. In some cases repeated injections of mallein increase, in other cases decrease the severity of glanders symptoms. Prof. A. Johne* of the Royal Veterinary school at Dresden tabulates the results of mallein tests upon forty-nine horses which had either been exposed to glanders or had shown symptoms which rendered them suspicious but not sufficiently definite, except in one case, to warrant a diagnosis of glanders. Of these twenty-five showed an increase of temperature of 1° C. (1.8° F.) or more, of which twenty were destroyed and found upon post-mortem examination, glandered, the others upon re-testing were pronounced sound. Five animals somewhat suspicious before testing, but showing no elevation of temperature, were destroyed and found free from glanders. The other animals remained apparently sound. Professors Hutrya and Preisz† of Buda Pesth, Austria, review 486 tests with mallein upon horses exposed to or suspected of glanders, of which post-mortem examinations of 126 animals were made. Of this number twenty-two animals showed an elevation of temperature of less than 1.5° C. (2.7 F.), eight of which were found glandered, thirteen free; fifteen horses showed a reaction of 1.5° to 2° C., all of which upon post-mortem were found glandered; and eighty-nine animals reacted 2° C. or over, of which eighty-four were found glandered and five healthy. Of these five, one did not show the typical reaction described above, while in the other four the writers suspected serious errors either in the quality of mallein used or in the post-mortem examination. H. Schindler,‡ chief veterinarian to the 7th Austrian hussars, after ineffectual attempts to stamp out glanders in his regiment by the ordinary means of destroying all those showing symptoms of the disease, used mallein upon twenty-six exposed horses, three of which reacted 2° or over, and after death, were found glandered. The three showing the next highest tempera-

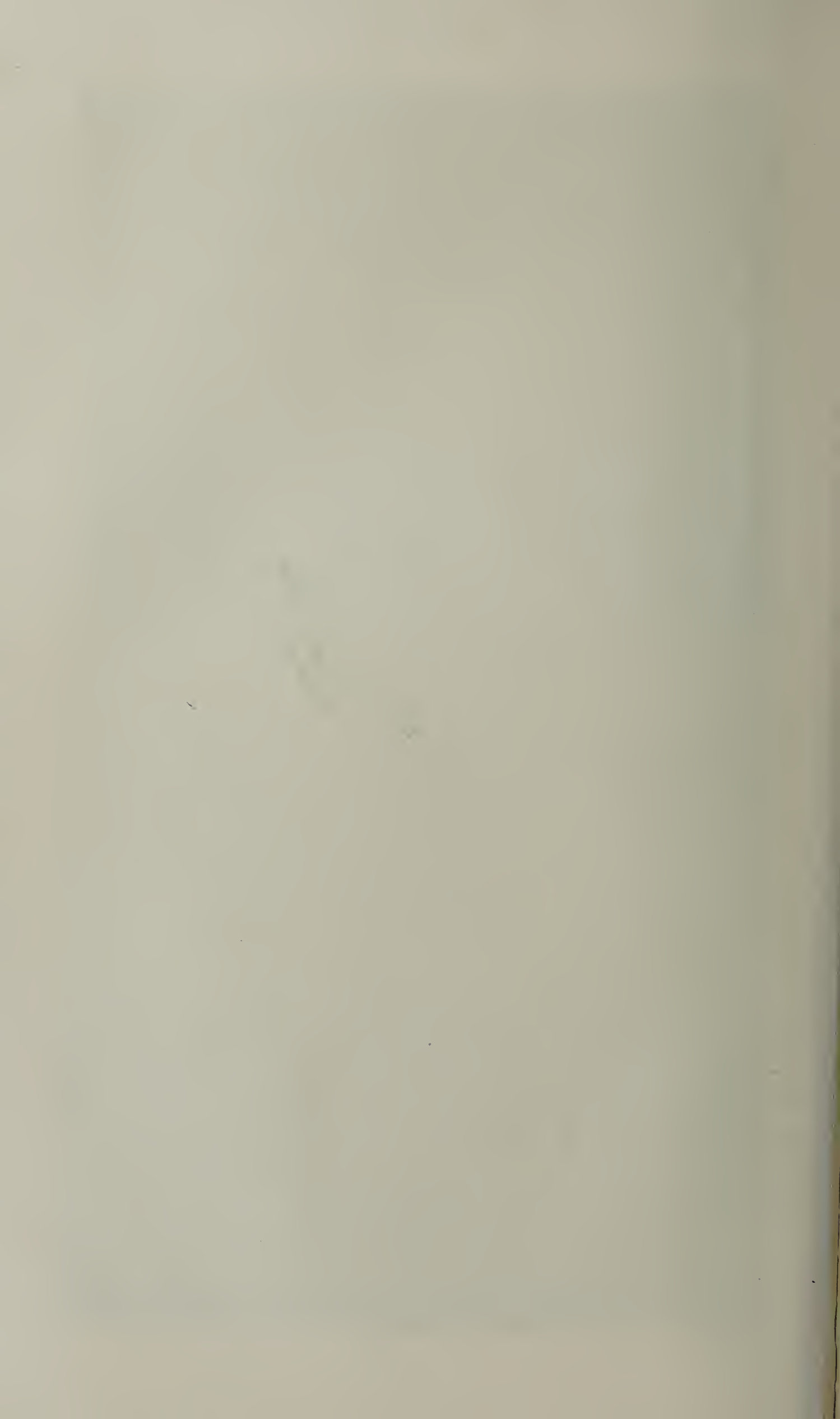
* Deutsche Zeitschrift fur Thiermedecin, March, 1893.

† Ibid, September, 1894.

‡ Oesterreichische Monatschrift fus Thierheilkunde, July, 1894.



FIG. VI.



ture, all less than 2° above normal, were found upon examination after death to be healthy.

Laquerriere* with Latour, records a test with mallein in an infected transfer stable in Paris containing 141 animals, but ten of which showed signs of glanders prior to the test. These ten, with eighty-seven others which had shown no symptoms of glanders reacted to the mallein to the extent of 2° or over, and upon post-mortem examination the entire ninety-seven were found glandered. Twenty-five of the remaining animals showing a fever of 1° to 1.5° after the mallein injection, were killed and found glandered, while five others, showing no reaction, were found healthy upon post-mortem examination, and the remaining twelve, showing no reaction, remained sound. Nocard† of the National Veterinary School at Alfort, France, after trying in vain by rigid inspection and killing of all diseased animals found, to control glanders in a transport stable in Paris containing some 6,000 horses, finally resorted to the use of mallein, and was surprised to find that several hundred animals showed fever after the mallein injection, scarcely any of which showed any signs of the disease before. All these were killed, and post-mortem examinations showed them all to be glandered, many of them only to the extent of a very few small tubercles or nodules in the lungs, the nature of which was clearly proved by making pure cultures of the glanders germs from these nodules.

I. Neiman‡ speaking of the use of mallein in Russia gives a long list of investigators, all of whom fully agree to the great merit of this substance as a diagnostic agent in glanders. Dr. F. Boschetti§ records a considerable number of experiments with mallein in Italy, and pronounces it a thoroughly reliable test for glanders in all stages. Although less numerous, tests with mallein in the United States have proven quite as satisfactory as in Europe. De Schweinitz|| and Kilbourne of the

* Ibid, March, 1892.

† Bulletin de la Societe Centrale de Medicine Veterinaire, 1892, p. 978.

‡ Revue Veterinaire, November, 1893.

§ Oesterreichische Monatschrift fur Thierheilkunde, August, 1893.

|| Proceedings United States Veterinay Medical Association, 181-93.

United States Bureau of Animal Industry cite thirty-eight tests with mallein (mostly upon glandered horses) either by themselves or under their directions, in all cases proving wholly reliable. Dr. Pearson,* Professor Veterinary Medicine, University of Pennsylvania, experimented with mallein upon guinea pigs, some of which were healthy, others glandered; the latter reacted strongly.

Dr. Nuppe, in an unpublished paper, reports mallein tests upon about three hundred horses in large establishments in New York city where glanders had long been prevalent, with the result that several cases of internal or masked glanders were found and destroyed, putting an end to the ravages of the disease in the infected stables.

In the brief time during which this situation has existed it has not been practicable to arrange for experiments with contagious diseases at the station, so that our opportunities for making mallein tests have been upon farms where the disease existed, a condition which has necessarily restricted our experiments within very narrow limits. Our experiments with mallein were confined to two stables in which glanders had existed for some time and the mallein test was applied to eight animals. The results of these eight tests may be briefly summarized, as follows:

NO.	DATE.	AV' RAGE TEM- PERATURE DAY PREVIOUS TO TEST.	TEMPERATURE AT TIME OF INJECTION OF MALLEIN.	HIGHEST TEMPERATURE AFTER INJECTION.	NO. OF HOURS AFTER INJEC. WHEN HIGH'ST TEMPERATURE OCCURRED.	INCREASE OF TEMPERATURE IN DEGREES CENTIGRADE.
1	Feb. 17, 1884	37.2	36.7	39.7	12 $\frac{1}{4}$	3.0
2	" " "	37.9	36.2	39.7	10	3.5
3	" " "	36.9	37.3	40.2	10	2.9
4	" " "	—	36.9	38.0	10	1.1
5	" " "	—	36.9	39.0	12 $\frac{1}{4}$	2.1
6	July 3, 1894	38.3	37.7	40.6	12	2.9
7	" " "	38.2	37.5	39.7	12	2.2
8	" " "	38.1	37.3	38.4	12	1.1

Nos. 1, 2, 3 and 5 were all clearly affected with glanders and so pronounced before using the mallein. As will be seen all

* Journal Comparative Medicine, September, 1891.



FIG. VII.

showed a reaction to mallein of not less than 2.9° C (5.22° F). No. 5 showing a reaction of 2.1° was apparently well and so continues, which may be accounted for by an accident in injecting the mallein, the day being so cold that the mallein froze in the syringe, rendering the dose uncertain and no opportunity has occurred to make a second test. No. 5 has at no time shown signs of glanders, although the reaction clearly denotes that she is affected. She is the mate to, and was driven with No. 5, until the latter became seriously affected with glanders, when they were separated and both are still under observation. Nos. 4 and 8 remain sound.

The foregoing observations upon the employment of mallein form but a part of the great number of records of its use and serve only to illustrate its great value in diagnosing glanders. Its use under proper precautions is almost wholly without danger of error and places in the hands of veterinarians for the first time a reliable agent for determining promptly the existence or absence of glanders in suspected or exposed animals. The preparation and use of mallein is constantly becoming better understood, so that the errors made in its use at first, are now mostly understood and avoidable. The mallein test possesses a double value discovering unsuspected cases of glanders and freeing from suspicion animals affected with other diseases similar in appearance to glanders."

The subject of glanders in other animals and in man occupy also the attention of Dr. Williams and then he initiates us to the prevalence of the disease among Montana horses and reviews the treatment; a question of no little importance at present:

TREATMENT.

"In most countries the treatment of glanders is prohibited by law, and instead, the control and eradication of the disease is sought by compulsory quarantine, slaughter and disinfection. Its treatment has, until very recently, rarely been undertaken by qualified veterinarians, except as an experiment, while quacks and owners, ignorant of the nature of the disease, have been pro-

fuse in their efforts to cure the disease, it, in the meantime spreading to other animals. All kinds of drugs and nostrums have been used by these persons with the only result, if any, of causing a temporary improvement of symptoms rendering it all the more dangerous because unrecognizable. The curability of glanders has long been a vexed question, a few veterinarians holding that many cases were curable, while the majority held that all cases were positively incurable and surely fatal and between these two extremes every grade of opinion was held. These views have been modified largely by the character which the disease assumed in the particular country in which the veterinarian giving the opinion was located, so that those seeing the disease in countries like southern Russia, Roumania and Italy, where it is very mild, have been the most confident of its curability. With our increased knowledge of glanders and other infectious diseases the idea of a positively fatal contagious disease has well nigh disappeared and it is now quite generally admitted by leading veterinarians that some cases of glanders recover either spontaneously or under treatment.

Dr. Fleming, * late chief veterinarian to the British army, held several years ago that possibly some rare cases of farcy of a mild type and in the first stage might be cured, and lately † in the light of our present knowledge of the disease admits the possibility of recovery in a much greater number of cases.

Prof. Williams ‡ principal of the New Veterinary College, Edinburgh, admits the possibility of recovery in mild cases of farcy. Prof. F. Friedburger of the Munich Veterinary school and Prof. E. Frohner§ of the Royal Veterinary College at Berlin assert that rarely is glanders curable, an opinion shared by Prof. Dieckerhoff|| also of the Royal Veterinary School at Berlin, who relates an instance of recovery from glanders occurring in

* Veterinary Sanitary Science and Police, Vol. I., P. 505.

† Veterinary Journal, Oct., 1894.

‡ William's Principles and Practices of Veterinary Medicine.

§ Friedberger und Frohner. Lehrbuch der Speciellen Pathologie and Therapie.

|| Dieckerhoff's Lehrbuch der Speciellen Pathologie and Therapie. Vol. I. P. 154.

his practice. Prof. E. Nocard * of the National Veterinary School at Alford, France, gives the opinion that the use of mallein as heretofore described for diagnostic purposes not unfrequently works a cure. Dr. E. Semmer, † chief of the epizootic department of the Royal Institute for Experimental Medicine at St. Petersburg, states that Decroix and Bouzom in Algiers cured numerous cases of farcy, while Brusaco,, Tollovio and Saltella of Turin, Italy, report having cured twenty-five to fifty per cent of cases of glanders and Neuman in the Caucasus, Hauber, Bollinger of Munich and others report successful cures.

With Itzkovitch, Prof. Semmer observed at Dorpat, Russia, the spontaneous recovery of a severe case of glanders which had been induced by experimental inoculation.

Mercury and iodine have both been used in Russia with apparent success in glanders of horses and man, but Prof. Semmer regards mallein as giving the greatest promise of a fairly successful curative agent using it in a similiar manner to that already described for diagnostic purposes, and in this connection states that with this substance, Pilavios, principal veterinary surgeon to the Greek army, cured eight glandered horses, and Helman of Dorpat, Russia, three glandered horses and one ass, their cure having been tested, the animals being thereafter proof against inoculations with virulent glanders matter and showing no reaction to mallein. With blood serum from these horses Prof. Semmer rendered cats and guinea pigs proof against glanders. Leblanc ‡ asserts that certain forms of glanders are curable by the use of mallein.

V. Babes § Professor of Experimental Pathology, Bucharest, Roumania, after noting a long series of cases of unrecognizable or masked glanders in horses and their recovery, spontaneously or with the use of mallein, says: "The unsuspected frequency of masked and latent glanders in horses, and the fact that spon-

* Deutsche Zeitschrift fur Theidmedizin, Sept., 1894.

† Ibid "Neber gutartige heilbaren Formen des Rotes." Dec. 1893.

‡ Esterreichische Monatschrift fur Thiereeilkunde, July, 1893.

§ Veterinary Journal, Vol. XXPIX, p. 266.

taneous recovery takes place in a large number of cases of the disease—the possibility of which has been denied by most investigators, but must, nevertheless, be looked upon as a rule, for otherwise half the horses would die from glanders in certain countries—suggests the question whether the glanderous infection in other animal species, and more particularly in man, does not present the same peculiarities as those I have just described.” Prof. Bonome * of the University of Padua, Italy, records the successful treatment of glanders in horse and man by the use of mallein. Prof. Le Clainche † of the veterinary school at Toulouse, France says: “There is nothing fatal in glander infection, on the contrary, a large number of animals resist it and the lesions already developed cicatrize (heal). It is established that glanders may disappear in the absence of all treatment.”

It should be noted that nearly all the above cited cures from glanders are reported from the most southerly portions of Europe, where the disease is of a very mild character, resembling in all essential particulars the type the malady usually assumes in Montana and other Rocky Mountain states, in which region several veterinarians have seen apparent recoveries from this affection, and where it not rarely happens that animals pronounced glandered by veterinarians, apparently recover and remain sound so far as can be seen, frequently leading the owner to believe that an error has been made and that the horse had in reality been affected with some other less serious disease.

It is not uncommon to see in this state animals clearly affected with glanders which, according to the observation of the owner, have evidently been affected for five, six or more years, retaining at all times the general appearances of good health, part of the time free from any glanders symptoms and constantly able to perform ordinary work, showing in every way a strong tendency to recover.

In one case now under observation, known as No. 6 in the

* The Veterinarian, Vol. LXVII, p. 751.

† Veterinary Journal, Vol. XXXIX, p. 2.

table on page 18, apparent recovery from acute glanders has taken place in a few months, without treatment, while in No. 7 of same table, glanders is clearly present according to the mallein test, the animal showing otherwise every evidence of robust health. It consequently seems probable that spontaneous recoveries from glanders take place among Montana horses, especially among those living wholly free and practically wild upon the high ranges.

Although most modern investigators admit the curability of some cases of glanders, these recoveries are confessedly few and the treatment of the malady, whether by medicines or mallein, is yet purely experimental, unworthy of confidence from a practical standpoint, yet pointing hopefully toward reliable treatment in the near future. Apparent recoveries from glanders are, unfortunately, too often apparent only, and serve to continue the spread of the disease.

A horse apparently recovered from glanders is worthy of being regarded with very great suspicion, and his apparent recovery should not be accepted as real until satisfactorily tested with mallein, and the treatment of glandered animal, except experimentally, by competent investigators, should be prohibited until further knowledge is obtained upon the subject."

The bulletin closes with a few remarks on the question of immunity and the eradication of the disease from Montana.

The entire pamphlet is a valuable addition, even to veterinary libraries, and is called to be of great value, presenting as it does before the public the general subject of glanders, which so many believe they know all about and yet are ignorant of the first fact connected with it.—[A. L.]

CANINE DISTEMPER—ITS CAUSES, SYMPTOMS, SEQUELS AND TREATMENT.

W. E. WADAMS, V.S.

MR. PRESIDENT AND GENTLEMEN:—The subject I have chosen for my essay, is one, I think, much overlooked by the

Veterinary profession, for the simple reason, that the majority of the practitioners consider "Canine Practice" of small importance, and not sufficiently remunerative for the time and trouble expended; but, be that as it may, it is a source of considerable income to me, for I find that men who own dogs valuable enough to treat, do what they can cheerfully for their pets and are willing to pay reasonably for the effort.

At one time I was inclined to believe from the numerous forms distemper assumes, that there was really no such distinct disease, but that a variety of complaints had been ignorantly jumbled together under a term which affords no distinguishing mark by which to test its separate existence. But closer observation has enabled me, I think, to seize the clue, which explains all these apparent discrepancies, and also leads the way to the scientific treatment of this sometimes unmanagable disorder.

I began my investigation by considering what symptoms invariably attended upon distemper. At first I was completely puzzled, for I found in one series of cases nothing but cough, and discharge at the nose and eyes, in another these symptoms were absent, and their place supplied by head symptoms, and fits, whilst again in the third set, the dogs all suffered from diarrhoea with discharges of blood and had neither head nor chest symptoms in any stage of the disease. In all these cases, however, I found there was fever, and that of a peculiar kind. This was not like the ordinary feverishness which dogs are subject to, and which attends upon almost all their acute attacks, but of a low typhoid character, with great exhaustion, loss of appetite and in the latter stages a collection of brown fur or as it is called in human medicine "Sordes," about the teeth.

It seems strange that such men as Dr. Jenner, James Woodruff Hill, Forrest and others, did not think of this fact, but if so have failed to mention it. Their experience in vaccination proved a failure and this is the universal opinion of all modern professional men who have given it a trial. Everyone, however, must recollect numerous instances in which a simple clue once seized will explain away all differences or difficulties, except the one

astonishing fact of this simple clue not having long ago been detected.

The points of similarity between distemper in dogs and typhus fever in man are so strongly marked that a treatise upon the latter is all that is wanted to enable anyone who understands medical terms or phrases to treat distemper, or as I call it typhus fever with the greatest probability of success.

I know full well that this disease is looked upon by many with contempt and as a loathsome disease, but we are here to treat all domestic animals, and why should the ailments of our faithful friend the dog be omitted? His care and treatment belong to our profession and demand attention, and in years to come the treatment of the true friend the dog will be sought by the professional man instead of ignored as unworthy of his attention.

How many practitioners are there who do not despise the dog as a patient, and hate to be called upon to treat him, but for my part give me a man who loves or appreciates the value of his dog and I can invariably satisfy its owner, replenish my exchequer and do some good to the poor though despised dumb brute.

The old adage still remains, and that is, "Tis only a dog," and poor old Watch, Rover or Spot is left to die or get well as the case may be, starve or freeze after years of faithful service.

Symptoms:—I define distemper in the dog as a fever of a nature similar to typhus and always followed by these symptoms:—

There is first a dullness and restlessness with partial loss of appetite, heat and dryness of the nose. rapid but feeble pulse, and dull eye the white of which is generally streaked with dark red blood vessels, and the dog seems to be extremely sensitive to cold. The urine is scanty and high colored, considerable thirst, the motions are either costive or loose, if the latter often of a pitch color, the flesh and strength fail in a remarkably rapid manner so that the dog is unable to stand inside of a week; the appetite by that time is entirely lost and frequently the food which is given by force is returned or speedily passed through

the bowels unchanged. The respiration generally becomes quicker than natural, though this symptom is not so universal as others I have mentioned. In fact all the processes of respiration, circulation, digestion and secretion are disturbed in a remarkable degree, and in this I believe is the essence of the disease, and the healthy return of these functions is always an indication of convalescence; the blood is no longer depurated properly by the agency of the lungs, liver and kidneys, nor renewed by healthy materials, the result of good digestion.

The circulation consequently is imperfectly carried on, and the brain is supplied with impure blood which is full of matters acting as a poison to it, and as a consequence death often takes place at an early date from a fit. Whatever secretions are affected, are vitiated in quality and altered in quantity, sometimes being almost stopped occasioning the dry husky cough and constipation of the early stage; and sometimes in excess where you have the profuse offensive discharge from the nose and bronchii; or the pitchy motions from the intestines which accompany the progress of the disease; such are the general and characteristic symptoms of the disease.

The local complications involved in this complaint may be enumerated as follows: 1st. The affections of the chest; 2d. Of the liver, stomach and bowels; 3d. The kidneys; 4th. Of the brain and nervous system; 5th. Of the skin. Each trouble being represented by the usual phenomena pertaining to said organs.

Etiology.—The most common cause of distemper is no doubt infection, but it is occasionally epidemic, and then most probably depends upon some condition of the air, But it also seems to be the natural tendency of all debilitating diseases in young dogs to run on into this typhoid type.

Whether the disease is common catarrh or influenza, or inflamed liver or lungs, or even the irritative fever of worms or teething in all these cases the tendency seems to be to put on the form of low typhus and this is especially the case when the dogs are ill fed, or crowded together in poorly ventilated kennels; or in fact submitted to any of the ordinary predisposing

causes of typhus fever in the human subject. And this disease once established, soon spreads to all within its reach of its influence. The infection seems to be carried with them by dogs after their convalescence. I have frequently known of a severe attack supervene upon the contact with a puppy in the slips which was sufficiently recovered to run, though of course not in a fit state for such an exertion.

The kennel also seems to retain the infection for a long time it being most probably absorbed in the urine, etc.

The walls, etc. should be well washed with chloride of lime or some other disinfecting fluid. After the dogs are removed some time should elapse before others are placed in them. Dogs seem to be particularly liable to distemper when approaching maturity, the greater number being attacked between nine and eighteen months old, but in the typhus fever of man it is not confined to that age; the suckling and the old dog are also open to its attack, though in a much less degree.

As in the human being again, one attack generally though not always preserves the individual from another attack.

Indeed the laws of contagion and the statistics of the two diseases are precisely the same, making allowance of course for the difference in the time of coming to maturity, and reckoning age in the dog by months and in the man by years, so that a dog twenty-one months old may be considered as mature, as a man twenty-one years of age.

Period of Incubation.—This disease like typhus fever takes from ten days to two weeks after infection before making its appearance.

Duration.—Distemper varies in the length of attack from a few days to two or even three months; but the average period like that of typhus fever is twenty-one days.

Diagnosis.—In its wildest form distemper is very often mistaken for ephemeral fever or influenza. Severe distemper is most likely to be confounded with hydrophobia, from which it may be distinguished either by the absence of all aberration of intellect, or by the difference of the form of its manifestations. In distem-

per there is no restlessness, or at all events only a tendency to change the posture, whilst the hydrophobic dog is always on the watch and eyes every one with a wild suspicious gaze. The distempered dog is certainly nervous but only from fear, while the hydrophobic dog knows neither fear nor pain, and will also resist to the death any threats or actual punishment.

If the brain is much affected in distemper there is almost always a fit or paralysis neither of which occurs in hydrophobia, and lastly the distempered dog eats nothing, while the hydrophobic animal has a depraved appetite, and devours any filthy material which comes in his way.

Distemper is liable to be confounded with any of the inflammatory diseases which attack the brain, lungs, liver, stomach, or kidneys, but in the simple inflammation of any of these organs there is not the extreme and speedy emaciation and loss of strength noticed always in distemper.

Treatment.—The management and remedies used in this disease must vary with the stages of the malady, and must necessarily be considered under four heads, viz.: The periods of incipency, reaction, typhoid and convalescence. The incipient stage, is, I am sure treated with more success in the following manner than any other.

Put your puppy or dog as the case may be in a comfortable warm well ventilated place, avoiding of course damp or dark cellar; a good dry bed and clothing if in a cold climate. Give a puppy ten months old the following:—

℞	Hyd. Chlor. Mite,	grs. 2
	Pill Rhei C.,	Dr. I
	Soda Bicarb.,	grs. 30
	M. ft. pulv.,	Put in six capsules

Sig. Give one every two hours until all are taken.

At the same time put ten grains of the hyposulphite of soda to each pint of water the dog takes. Feed on boiled milk, soda crackers and a little well cooked mutton, it being easier digested. The stomach will bear more mutton than any other meat. Many

men advise oat-meal, but from an extensive experience both in treating this disease and many others, I find oat-meal too loosening unless combined with a sufficiency of wheat flour, and as the bowels have generally a tendency to relaxation, we can not be too careful, but I must here remark that to a healthy dog Scotch oat-meal is his greatest support.

The period of reaction I may say, commences the moment a local symptom shows itself, and it is at this stage that the greatest difficulty in the treatment arises. The chief complications that draw our attention now are the chest, the abdomen and the head. The skin complications being of minor importance, except a sign of the severity of the attack.

We will now take up the chest complicated with the affection of the bowels.

Now gentlemen with all due respect to my superiors I am antagonistic to all. Dr. Stonehenge, Dr. J. W. Hill, Dr. Jenner and numerous others claim tartar emetic their sheet anchor. I claim it a dead letter.

In chest complications I want to lower the temperature and keep up the strength, owing to the debilitating influence of the disease. To dose we must use our knowledge of materia medica, and this is my conclusion after considerable experience in the treatment of this disease, with a fair knowledge of the above named book.

I take my temperature, and if I find a high one I give a toxic dose of quinine, say ten grains, put in a hot bath and rub dry, then blanket and if not relieved in eight hours I blister the sides with cantharides, muzzling the dog at the time, then I give the following prescription, being always particular in its administration.

℞ Pulv. Digitalis, grs. 6
 Pulv. Pot. Nitras, dr. Iss
 Ext. Glycerizzha, dr. I
 Syrup Q. S.

M. F. Mass et divide in capsules XII.

Sig. Give one every four hours.

If the animal does not improve on this treatment, and seems to lack recuperative powers, I begin a stimulating treatment, feeding beef tea, mutton broth and raw eggs beaten up with milk.

The abdomen is generally the seat of severe intestinal disorders, the principal being a diarrhœa accompanied with pitchy discharges. I invariably treat this complication with small quantities of calomel, one-sixth of a grain, prepared chalk, ten grains, of subnitrate of bismuth and turpentine emulsions, always remembering if any intestinal disturbance is due to intestinal parasites, remove them as soon as possible using the mildest remedies on account of the irritable condition of the alimentary canal, areca nut for the tenia family and oil of wormwood for the lumbrecoids.

The head symptoms are generally a severe complication especially if attended with chorea. I put a seton in the back of the neck, put tr. iodine and tr. cantharides along the spine, every other day for two applications and give internally the following.

℞ Strychnia Sulp., grs. I
 Ext. Gent. Q. S.

M. F. and Mass. Divide in fifty pills and put in capsules No. 50.

Sig. Give one night and morning after feeding, gradually increasing the dose until four a day be taken.

Typhoid Stage.—Watch your patient carefully as this is the stage which I believe indicates the essence of the disease known as distemper, and unless the dog has been evidently submitted to the contagion it cannot be pronounced to have had the distemper.

I give the following tonic three times daily.

Quinine one grain, port wine one half ounce, or cod liver oil one half ounce, and tr. chloride of iron ten minims, controlling the bowels with subnitrate of bismuth, ten grains and sulphate of morphia one fourth of a grain every four or six hours as occasion requires.

Use injections of starch, always using such food as will be easily digested, and be sufficiently nourishing to maintain the strength of the patient.

Now Mr. President and gentlemen, I thank you kindly for your patience and attention, and I sincerely hope that this essay may elicit some discussion.

The subject I am aware is obnoxious to many but in the future will undoubtedly benefit the whole profession, for as the dog is bred so is the requirements of the veterinarian in demand.

This simple essay although not so technical, pathological or flowery as some, is my own experience based upon facts. I hope this may hold up support or in any way benefit the poor but faithful companion of man, the dog.

UNITED STATES MEAT INSPECTION.

By DR. E. SALMON, V.S., Chief Bureau of Animal Industry.

Editor AMERICAN VETERINARY REVIEW :

DEAR SIR :—The communication of Dr. Schwarzkopf in the March number of the REVIEW, demonstrates once more how difficult a matter it is for some gentlemen to comprehend either the actual condition of the German meat inspection service, or of that which has been established in the United States.

I should not ask your indulgence to print another instalment of this discussion were it not that certain statements made by Dr. Schwarzkopf bring the matter to such an acute stage that further attention is demanded. He tells us that he “was very much annoyed when a member of the association assailed the United States Meat Inspection Service at our last meeting, for which there was no occasion whatever ;” and then he proceeds to repeat and intensify the offense, in the light of all that has been said and written on the subject !

If none but our people saw the REVIEW, I might leave his absurd misstatements to the intelligence and knowledge of the

readers, but as people in other countries will read them, who can only look to your pages for facts, it now becomes my duty to insist and to prove that certain of his statements concerning our meat inspection system are absolutely incorrect.

In order that I may not be accused of garbling, permit me to quote an entire paragraph. He says :

While the United States Meat Inspection owes its origin to the German law, it can well afford to differ in the conception of what is sound and unsound flesh as long as the people of the United States pay for everything. This little meat inspection of ours is merely for a show, whereas Germany's system is for a general purpose ; theirs is to help along a commercial undertaking of a certain part of our population, theirs is for the benefit of the whole nation of 55,000,000 people ; ours is a neat little branch of a government department ; theirs is a law in itself, and a gigantic system, with a thousand branches running through the whole country.

Here we have a neat example of that German egotism and supercilious assertion which has lately been served up to us *ad nauseum*, and which is sufficient excuse for the rather pointed replies which I have found it necessary from time to time to offer. Surely, a gentle rejoinder could not be expected in such an aggravated case.

How, and in what respect, does the United States Meat Inspection owe its origin to the German law ? It would be interesting to know when this astounding fact was discovered and who was its discoverer. And what are the grounds upon which Dr. Schwarzkopf asserts that " This little meat inspection of ours is merely for a show, whereas Germany's system is for a general purpose ? "

The United States law provides that the Secretary of Agriculture shall cause to be inspected all cattle, sheep and hogs, the carcasses or products of which are to be transported and sold for human consumption in any other State or Territory, or the District of Columbia. It provides for the marking or labeling of the carcasses and products of animals " found to be free of disease, and wholesome, sound, and fit for human food ; " while to transport or to deliver for transportation from one State into another any carcass or food products of an animal declared unsound or diseased is made unlawful and subject to a heavy

penalty. Further than this, the Secretary of Agriculture is authorized to make such rules and regulations as he may decide to be necessary to prevent the transportation from one State into another of the condemned carcasses or parts of carcasses of inspected animals.

Congress in this act has provided for a vast system of inspection covering meat shipped from one State to another for domestic use, it has authorized the Secretary of Agriculture to adopt any measures he may see fit to prevent the shipment of condemned meat, under which authorization he causes its immediate destruction as soon as condemned ; and it has gone about as far as it is possible for it to go under the Federal Constitution to protect our citizens from diseased and unsound meat. What possible excuse or justification is there for the assertion that all of this inspection and all of these precautions are "merely for a show?" And is there any more reason for the assertion that the origin of this domestic system of inspection is to be sought in any German law?" Such claims are too preposterous for consideration.

It is possible in making the assertion that our inspection is due to German law, Dr. Schwarzkopf had in mind the microscopic inspection of pork for trichinæ, and if this were the case, any one can see, by examining the law, how egregiously he is mistaken. The meat inspection law does not provide for a microscopic inspection of pork, and the only animals specifically authorized to be inspected on account of the meat being intended for export, are cattle. The microscopic inspection can only be made under the general authorization to make a post-mortem inspection of the carcasses of all cattle, sheep and hogs which are the subjects of interstate commerce. As Congress gave no special direction for inspecting export pork, the kind of meat which goes to Germany, and did direct an inspection of export beef, which by the way does not go to that country, the reader will have no difficulty in appreciating at its proper weight the influence of the German law in securing our legislation.

Our inspection of meats for domestic consumption is no more

a "commercial undertaking" than is the meat inspection of Germany: and if the German inspection "is for the benefit of a whole nation of 55,000,000 people," ours is no less a benefit to a whole nation of 70,000,000 people. As to the point of the statement that our inspection "is a neat little branch of a government department," while "theirs is a law in itself, and a gigantic system, with a thousand branches running through the whole country," I opine that nothing less than the intricate and mysterious meanderings of the German mind will ever grasp it. Is not the German inspection a branch of a government department, and is not an act of Congress a law in itself? Have we not a gigantic inspection system running through the whole country, a much larger country than Germany, and a country containing at the same time a much greater population and a vastly larger number of animals? We inspected in the United States during the year ending June 30, 1894, not counting microscopical examinations, 12,944,000 head of meat-producing animals at the time of slaughter. How many were inspected under the German national inspection in the same manner and during the same time?

Dr. Schwarzkopf goes on to say: "It is all very well to say we condemn everything that is not sound and ship to Germany only strictly healthy meat, when the carcasses condemned at home are turned loose at our local markets and are considered good enough for our own people. I never have seen so much poor meat in my life than in the Chicago butcher shops, and I hope to see the day when the United States inspection can be enforced all over the country to rectify these evils."

Has there ever been a worse misrepresentation of the Federal meat inspection or a more deliberate attempt to depreciate its value in the eyes of the world than is contained in the above paragraph? If so, I hope some one will point out the author in order that he may receive full credit for his ability to pervert the facts.

It is not true that the carcasses condemned at home are turned loose at our local markets and are considered good

enough for our own people. The condemned carcasses and parts of carcasses are now, and always have been, put in the fertilizer tanks and destroyed as an article of human food.

We have not condemned carcasses on account of trichinæ, it is true, as they have simply been withdrawn from the trade in the case of countries declining to receive pork without a microscopic inspection. The pork from packing houses, which is salted and cooked, has not proved very dangerous in this country, and we have made no pretenses of guaranteeing trichinæ-free pork to our consumers.

The microscopic inspection even in Germany is a delusion, and does not protect from trichinosis as can be very easily shown. There has, consequently, been no special reason for enforcing the destruction of such carcasses in this country until a general microscopic inspection could be made.

The trichinæ inspection is, however, but an insignificant part of the meat inspection system of the United States; it is the one and only part which we were led to undertake by German influence; and it is the only part which can be assailed as being of a commercial nature and not protecting our own people equally with the foreign consumer.

But the fact that there necessarily are weak points about trichina inspection, the one German idea in our system, does not justify in the least the sweeping assertion that the condemned carcasses found in our inspection are turned loose at our local markets. All the hogs as well as the cattle and sheep slaughtered for shipment to other States or foreign countries, are subjected to a rigid ante-mortem and post-mortem inspection, and all the carcasses found diseased and unfit for food on those inspections, are condemned and destroyed. That is the incontestable fact, and Dr. Schwarzkopf's friends will all regret his attempt to obscure and misrepresent it.

What does he mean by telling us in this connection that he has never seen so much poor meat in his life as in the Chicago butcher shops, and that he hopes to see the day when the United States inspection can be enforced all over the country to

rectify these evils? Does he mean to insinuate as one would be likely to infer from his language, that this poor meat was diseased and unwholesome meat, which had been condemned on the Federal inspection and turned loose at the local markets? If so, the statement may be dismissed as incorrect and unworthy of consideration. Does he wish us to understand that the meat was simply lacking in quality, and not produced from diseased animals? If so, he was unfortunate in his selection of language, and the remark has no bearing on the question of meat inspection. Does he refer to meat prepared in abattoirs where animals are killed exclusively for the local trade and where there is of course no Federal inspection? If so, he was nevertheless unfortunate in his language and the remark has no bearing on the subject under discussion.

The facts are that Chicago has an excellent system of Federal inspection. This inspection includes all cattle and hogs slaughtered in abattoirs which do an interstate business, and all meat condemned in these houses is destroyed as a food product. This inspection is intended to protect the consumer from the meat of diseased animals or of those which are not in a proper condition to produce wholesome food. It does not guarantee that the meat is from either young or fat animals. The people of Chicago can obtain inspected meat by demanding it from the retailers; but the United States Government can never go into the slaughter houses which kill exclusively for the local trade and there enforce its inspection. It requires but a slight acquaintance with our form of government to understand that inspection of a local trade comes under the reserved police powers of the States, and that it is unconstitutional for the Federal Government to attempt such inspection until the articles have entered the channels of interstate or foreign commerce. If, therefore, Dr. Schwarzkopf hopes for a more extended Federal inspection in Chicago than now exists, in order that he may not be offended by so much "poor meat" in the butcher shops, his hope will not be shared by patriotic American citizens who love and reverence our form of government, and who are not in

favor of its assuming the duties which properly belong to States and municipalities.

Dr. Schwarzkopf is inclined to deny my statements as to the defects in the German trichina inspection and asserts that they are just as unfair as the reports that were made concerning the American inspection. Let us see.

It is not necessary to depend upon the evidence of the average American tourist who "with characteristic hurry, runs through the schools and institutions of all kinds." Although the doctor may decline to accept the statements of Americans, he certainly will not be so uncomplimentary towards his countrymen as to doubt their specific reports. I find from going over these reports that not less than 908 cases of trichinosis in people occurred in Germany during the thirteen years from 1882 to 1894 inclusive from eating inspected pork. This is more than has ever been reported in the United States from uninspected pork, taking all the records from 1852 to 1894.

Suppose we allow the Germans themselves to tell us why their inspected pork has produced so much trichinosis.

March 30, 1889, the Chief of Police of Berlin issued a warning to the public against eating raw pork, explaining that pork reached the market which had either not been inspected at all, or had been only superficially examined.

Dr. H. Wasserfuhr says (*Hygienische Rundschau*, Jg. No. 3, pp. 81-83): "It is well known, however, that the trichina inspection fulfills its purpose very inadequately for the majority of cases of trichinosis are due to eating raw or rare pork, which has been declared free from trichina by the official microscopic examination."

Drs. J. Esser and W. Schutz report (*Archiv f. wiss. u. praht. Thierheilkunde* XX, No. 1): "The examination for trichina in the Johannisburg district is according to the report of District Veterinarian Kleinpaul, very incompletely carried out. As an example of this a case is mentioned where a trichina-examiner pronounced a trichinous carcass as free from the parasites. Eight persons were infected from eating the meat of this car-

cass. The examiner was indicted, but when questioned in court it was shown that he had absolutely no conception of trichina-examination. His examination had been very superficial, but he had followed exactly the directions of his instructor, a district health officer. He was therefore acquitted."

According to the report of District Veterinarian Krueger, a meat inspector in the district of Pr. Eylau was imprisoned for four months because he had not complied with the statutes and personally taken pieces of meat from a hog which was afterwards determined to be trichinous.

District Veterinarian Frauenholz reports that since the beginning of the trichina inspection in 1875 in the district of Brieg, several hundred thousand hogs had been examined microscopically, but not a single trichinous carcass had yet been discovered. This extraordinary result appears to have aroused a suspicion even in the German mind.

In an article in the *Vierteljahrschrift f. öff. Gesundheits.*, 1885, XVII, pp. 98-105, the following is recorded :

"Dr. Rupprecht (p. 98) states that the reason trichinosis breaks out in spite of the inspection is that the inspection is not thoroughly or intelligently carried out. Some of the inspectors have poor eyesight, and others imperfect microscopes.

"Kreisphysicus Dr. Rapmund (p. 99) says the carrying out of this sanitary law is left to persons who in many cases do not possess the necessary accuracy to fill this important office. It is really astounding, he says, that the State should have so much latitude in the choice, training and control of the inspectors and not impose restrictions at least equal to those required for midwives.

"Dr. Schwarz (p. 100) says of the two recent epidemics in Cologne, it has been proven that one arose from a carcass which had been condemned, but which was placed on the market through the carelessness of a police officer; the other through the uncertainty of an inspector who was more than sixty years old and not sufficiently trained.

"Ministerialrath Dr. Wasserfuhr (p. 102) said the trichina in-

spection was an untrustworthy measure against trichinosis. This is because the inspection in most cases is only superficially carried out on a few muscles by inexperienced and not even careful persons."

Dr. Stüler says (*Zeitschr. f. Medicinal-Beamte*, 1889, pp. 265): "Let us consider first the class of people from which the trichina inspectors are taken. In our Kreise, there were according to official statistics for 1887, 168 official microscopists to examine 24,487 swine. Of this number 58 belonged to the better classes or to trade, in which nimble fingers are necessary, or to the female sex; 35 belonged to the heavier trades, while 58 belonged to trades in which the heaviest work must be performed. Of 17 no details could be obtained. I have, myself, educated 50 of these persons as inspectors, and I know, therefore, from experience how difficult it is to teach the clumsy fingers of a stone-layer or of a blacksmith how to make a preparation and how to use the microscope; and also how hard it is to drum into these heads, unaccustomed to study as they have been for years, the absolutely necessary instruction. It required an inconceivable amount of patience."

In the Amtshauptmannschaft, Dresden, a microscopist was obliged to resign because he was not able to find a single trichina in a preparation which contained them. This was because his microscope was so dirty that it was possible to scrape off crusts with a knife. The lenses were all smeared and his book-keeping was grossly careless. (XXIII Jahresbericht ü. d. Medicinalwesen in Königreiche Sachsen, 1891-1892, p. 91.)

In the Bezirk of Oschatz, the microscopes were for the greater part in good condition; some of them were dirty. In one case the adjustment screw was so rusty, the mirror so dirty and the lenses so obscured by dirt and fat that the instrument was totally useless. (XII Jahresbericht, u. s. w. Sachsen 1890-1891, p. 127.)

It was stated that the necessity of the rule requiring an inspection of the microscopes was shown by the fact that in Querfurter Kreise, of 124 instruments, 7 were so completely useless that it was impossible to find trichina with them. In Merseburg

Kreise one-fourth of the instruments, and in Kreise Weissenfels 46 out of 125 microscopes, were equally useless because of neglect in cleaning the lenses and slides.

Some of the microscopists who had been serving resigned out of fear of the examination, while five of them were unable to recognize the trichina in a preparation containing these parasites. (Eulenberg H., Vierteljahrschrift f. gerichtliche Med. ü. off. Sanitätswesen, XXX, p. 178, 1877-1879.)

In one case it was proven that the butcher himself had cut out the samples, and had made the entry "trichinenfrei" in the inspection book. The result was an outbreak of trichinosis. (XX Jahresb. Sachsen, 1888-1890, p. 99.)

In Glauchau an inspector took samples, stamped the carcass as passed, and then went home to make the examination. He had always been in the habit of examining the specimens after passing the carcasses. (XVI. Jahresb. Sachsen, 1889-1891, p. 99.) In Germany the inspectors are paid a stated sum for each carcass inspected, and some of them apparently conclude that the manipulation of the specimens is the main consideration, and whether they are able to see through their microscopes, or whether the carcass has been passed and consumed before the specimens are examined are matters of no consequence.

An interesting case occurred in which eight persons were affected with trichinosis. The meat in the house was seized and found to contain the parasites. The woman of the house, a widow, begged for the meat and it was given back to her. She at once sold it to a butcher. (VIII. Jahresb. Sachsen, 1876-1878, p. 47.)

The above references, which could be added to if necessary, are sufficient to establish all that I have said about the German trichina inspection. For obvious reasons, I shall not give the name of the gentleman who was referred to in my remarks at Philadelphia as authority for the condition of some of the microscopes at Berlin. From other trustworthy sources of information, I learn that many of the microscopists that are unfitted by previous habits and calling for careful work of this character.

I do not bring out these facts simply because it affords me an exquisite pleasure to discredit the German inspection, as Dr. Schwarzkopf tried to make me assert, by garbling the language of my previous letter, but because it is a real pleasure to demonstrate to people who have a propensity for throwing stones that their own edifice is constructed largely of glass. For the modest, untiring, devoted, generous German scientists, of whom there are so many, I have the greatest respect and admiration ; but for that other class of critical, bumptious, arrogant, narrow-minded individuals who have made themselves offensive by their effusive and unscrupulous efforts to convince the world that our inspection is a farce, and our science a delusion, I have nothing of a complimentary character to say.

My views on veterinary education were given in a former letter, and there is no need for restating them in this. I am as anxious for higher education as any one, and I think I know as well as any member of our profession, both of what the higher education consists, and what are the most certain and practical methods of reaching it. When the gentlemen who are so fond of exploiting their views on this subject, successfully enforce proper entrance examinations, offer a curriculum and supply a faculty worthy of the ideal position which they assume, there will be no disposition to withhold full credit ; but for the present, while we may fairly be permitted to judge the accuracy of the teaching by the accuracy, or inaccuracy, of the deliberate and written statements of the professors, each one of us may have without reproach his own opinions as to the value of the extended course which they advocate.

If Dr. Schwarzkopf had been consistent, he would have gone back, after writing his last paragraph, in which he expresses his "inner feeling that a great wrong, a wicked offense is being perpetrated against our profession by some men of little education and less character in keeping up low grade schools," and avoided committing an offense of the same character by expunging the misstatements in the first part of his letter concerning the United States Meat Inspection. The veterinary profession

of this country is on trial at this time in the meat inspection service to a greater extent than in any other line of its work, and any one who unnecessarily, and without cause or reason casts reproach upon this inspection, which is being put entirely into the hands of veterinarians, is doing more to wrong and injure the profession than are the people at whom were aimed the bitter words that have just been quoted.

COAL TAR AND SOME OF ITS MEDICINAL PRODUCTS.

By W. L. WEST, SR.

A paper read before the Veterinary Medical Society, Ontario Veterinary College, Toronto, Can.

MR. PRESIDENT AND FELLOW STUDENTS:—To write a complete description of coal tar and its products would require the outlay of considerable time, and a large volume would result; my purpose this evening is but to bring to your notice a few of its compounds which I have thought most useful to us as veterinarians.

When coal tar is subjected to destructive or dry distillation, besides illuminating gas and coke, there are formed numerous other substances, varying in amount and character according to the quality of the coal, and the manner of its decomposition. These substances are volatile, boiling at varying temperatures, and originally condensed into a thick black liquid, the familiar coal tar. Formerly this was a waste product, and a source of considerable loss and trouble to the gas manufacturer. It is now, through the discoveries of chemists, a most valuable by-product, and a source of an infinite series of compounds of interest in the arts, science and medicine.

Among the latter, which are especially applicable in veterinary practice, and which I have to mention, are naphthalene, methyl-naphthalene, diphenyl retene, which are solids. Benzene, toluene, mesitylene are liquids, while among the acid compounds

we have phenol, ortho-cresol, para-cresol, meta-cresol, phloral, rosolic acid and creosote.

Phenol-Phenylic Alcohol-Carbolic Acid is one of the most useful and widely known products of coal tar. It was discovered and isolated in 1834 by Rungé, who gave it its name, but the honor of introducing it to the profession belongs to Calvert. Of its value in medicine, or more strictly speaking, surgery, you are of course well aware.

Naphthalene occurs as a white shining crystalline solid, melting at 176° F. Boils at 423° F.; is soluble in ether, alcohol, chloroform, and the oils, insoluble in water, but imparts its taste and odor to water in which it has been boiled for some time. Naphthalene is toxic to all fungi and micro-organisms, and for this reason it is a valuable antiseptic; manufactured now on a very large scale, it is consequently cheap, a point of considerable importance in our practice. It is of value in skin diseases, especially those of a parasitic nature, such as mange, scabies, fanus, etc.; as an expectorant in bronchitis and other respiratory diseases it has proven very useful. Dose for horse, 3 ss to 3 i.

Naphthol-B. Naphthol occurs in coal tar, but is usually prepared by direct method from naphthalene. It is a yellowish white powder, possessing the well-known phenol odor and pungent taste. It is permanent in the air, and soluble in 1,000 parts of cold and seventy-five parts of boiling water and soluble in all parts of alcohol, ether and oil. Its antiseptic and physiological actions were discovered and investigated by Bouchard, who found that a strength of 1-3,000 solution was sufficient to arrest the growth of pathogenic cultures in an agar tube, and as it is practically non-poisonous (the toxic dose for a man being ten ounces) is, I think, a valuable remedy, which would be useful in diarrhoea, dysentery and influenza, where the alimentary track is involved. Kaposi recommends a solution in oil of one to 250 as highly useful in conjunctivitis, laryngitis, etc. In man it has been used with much success in la grippe, and in cases of influenza in our patients, might also prove of value, being ad-

ministered by intertrachial injections of a one to 1,000 solution in water. Dose for horse, grains 15 to 3 i.

Salol-Salicylic Ether of Phenol.—This was first introduced to the profession by Dr. Salili, of Basel. It occurs in white shining powder, tasteless, with a faint aromatic odor. It is soluble in alcohol, ether, and oils, but insoluble in water. It is analgesic, antipyretic, but as an antirheumatic; it is neither so safe or so effectual as salicylic acid on account of its non-irritating properties, it forms a useful external dressing. Dose for horse, 3 iv. 3 vii.

Creolin.—An emulsion of cresol obtained by means of resin soap; it was first experimented with by Esmarch, who states that as a germicide, it is more valuable than carbolic acid, excepting in the case of bacillus anthracis creolin, it is said to be non-poisonous, but this must not be taken in its widest sense, as cases of poisoning have occurred by its careless and indiscriminate use, but compared to most antiseptics it is well-nigh noxious. Its actions and uses internally are only beginning to be appreciated. It prevents too rapid fermentation and is useful in tympanitis, flatulent colic, acute indigestion, etc., and as a vermicide; either in drench or as an enema it is very certain and speedy in its results. It is one of the most useful agents for rendering instruments aseptic, without corroding the metal, as so many antiseptics do. Mixed with iodoform, it destroys the odor without affecting its value. Dose for horse, 3 ii. 3 vi.

Lysol.—This is prepared by dissolving the fraction of coal tar which boils between 190° C. to 200° C. in fat, and subsequently emulsifying with alcohol. It is a clear oily liquid, with a feeble aromatic odor, and contains 50% cresols. Is miscible with water, alcohol, ether, and oils. Lysol was first introduced by Dr. Gerlach, in June, 1891. After elaborate research he found that both in mixed masses and pure culture of pathogenic organisms, it proved a better germicide than carbolic acid or creolin. A 1% solution has a soapy feeling and is useful for rendering the hands aseptic without injury. It does not affect steel instruments but will ruin celluloid handles. Wounds may

be sprayed with a 3% solution, but a weaker one would answer all purposes. It has no poisonous properties.

There are very many more useful medicinal compounds derived from coal tar, but I think those named will suffice for the present.

HYDROPHOBIA.

By J. H. ADAMSON, D.V.S., Charlottesville, Va.

(Read before the Virginia State Veterinary Medical Association.)

GENTLEMEN:—The subject of my essay, “Hydrophobia” or “Rabies,” is not chosen with the intention or assumption on my part of reflecting any new or extra light upon this important and momentous question, but simply to invoke, stimulate, and invite discussion in this circle of educated veterinarians; and I especially ask our brothers in the medical profession, if any are present with us to-day, to join us in our discourse. I therefore trust, that at the close of my reading, the members of this society who are gathered here for the purpose of advancing our claims upon the laity at large, and for the benefit and instruction of ourselves collectively, will indulge in good spirit in our open councils of discussion, and endeavor by all means within their power, to throw the search-light of their recent learning into the pros and cons of this paper, which attempts to deal with this somewhat imperfectly understood malady, as it appears before us at this present day. .

The compound word “hydrophobia,” as analyzed by our Greek and Latin masters, is a term expressing fear or dread of water. Rabies, rabis, means I rave, to rave, and when used to mark or characterize this distressing and terrible disease, is incorrect, erroneous, and misleading in every respect; so far as the word is capable of conveying the idea that any animal or man has a dread of water or any other liquid containing water, as any animal suffering from hydrophobia will drink and even wallow in water, not only willingly, but greedily, to the very last.

Hydrophobia is a disease originating in the canine, and less frequently in the feline. The poison or ptomaine effects are recognized by its morbid action and results in the animal economy. Rabies, or as it is erroneously called, hydrophobia, so far as the lower animals are concerned, is a disease which has been known from very early times, in fact centuries ago, but just how long the world has been cognizant of the fact, is not clear to us, and I am confident in asserting that it has taxed severely the medical and veterinary clinical sagacity, ever since its advent, throughout all generations up to the present era.

Plutarch asserts that, according to Athenordorus, it was first discovered in mankind in the days of Asclepiadea, the descendants of the God of Medicine, Esenlapins, by his sons Podalirius and Macheon, who spread through Greece and Asia Minor as an order of priests, prophets, and physicians, preserving the results of their medical experience acquired in the temples as a hereditary sect. Hydrophobia is also alluded to in the works of Aristotle, Xenophon, Virgil, Horace, Ovid, Celsus, Galen, and subsequently investigations were published by Boerhaave, Van Swieten, John Hunter, Majendie, Breschet, Virchow, Reder, Hertwig, Pasteur, Klebbs, Koch, Sternberg, Williams, Fleuring, Meynell, and many other notable men of our day.

In 1271 wolves were known to be affected with rabies in Franconia. In 1590 rabies prevailed in Spain, also in the same year at Monthelliard. During the early part of the century rabies was very prevalent, both in this country and in Europe. In 1869 there was a great outbreak in the north of England, and a great scare was caused among the kennels of fox hounds, and a vast number of dogs were destroyed to arrest the epidemic, also again, in 1876 and 1878, in the southern counties of England, where the lowlands seem to favor its propagation. It has occurred in every State in this Union at some time or another during the present century, but fortunately never to any alarming extent.

Causes of Rabies.—Opinions are divided at this date, as to the spontaneity of the origin of rabies. Some writers maintain

that even in the dog and other allied quadrupeds the malady never originates except by inoculation, whilst others assert that it originates spontaneously in the dog even in this country. Sternberg, Klebbs and Fleuring are positive that rabies is capable of spontaneous origin in the canine only, and that once generated in the dog it is transmissible by inoculation to every warm-blooded animal and bird.

Although it is possible for rabies to appear independently of contagion, it was at one time maintained that it never occurred in the bitch, except it developed by contagion, but this idea does not hold good, although it has been proven that it is far less frequent in females than in males.

Hydrophobia is a specific blood disease, due to some germ that has not as yet been discovered. It has not been isolated or cultivated, but sufficient proof has been found of its presence in the blood of the affected animals by the process of inoculation. It is known beyond doubt that a specific virus is developed in the saliva of all affected animals, and implanted through a wound or abrasion in the epidermis, or mucous membrane, thus conveying the disease to other animals or man.

It is like all other epizootic and contagious diseases; its prevalence is liable to many fluctuations, at times prevailing to an alarming extent, whilst at long periods the disease is almost unheard of. That its propagation is mostly due to inoculation, cannot be disputed, but its sources of spontaneous origin, and how produced, or where obtained by the victim, are circumstances which as yet are hidden in obscurity. The influence of climate, season of year, food, hunger, thirst, or domestication do not produce rabies. The evidence in support of the opinion respecting the non-gratification of sexual desire, is not without doubt, although it points strongly to the conclusion that sexual desire ungratified, as well as severe pain, prove to be exciting causes of this disease. Solitary confinement has also been advanced as an exciting cause, and the idea that hot weather is very productive of rabies is now entirely dispelled, and shattered to shreds, as the following tabulated report arranged by

that eminent professor, St. Cyr, of the Lyons Veterinary Institute, will show. It plainly states that rabies is even more prevalent in or during the temperate months, than those of extreme heat or cold. St. Cyr says that during the months of

		<i>Rabid.</i>	<i>Suspected.</i>	<i>Total Admitted in Infirmary.</i>
January,	1865.....	12	2	14
February,	"	14	4	18
March,	"	16	11	27
April,	"	14	20	34
May,	"	12	14	26
June,	"	6	14	20
July,	"	2	8	10
August,	"	4	3	4
September,	"	7	3	4
October,	"	1	1	0
November,	"	3	0	0
December,	"	1	1	2
Total.....		92	81	159

Pathology and Symptoms of Rabies.—Three circumstances in the pathology of rabies are worthy of notice, namely :

First.—That the period of latency, or incubation, after inoculation, is very indefinite, ranging from fourteen days to several years, and that it varies in different animals.

Second.—That inoculation does not always produce the disease, as one-fourth of inoculated animals escape.

Third.—That the disease is transmissible to man, mammals and birds, by the usual media at a later period than twenty-four hours after the death of a rabid animal, or after cadaveric rigidity (*rigor mortis*) has completely invaded the body.

As before stated, heat and cold do not favor the generation of rabies, the disease is hardly known on the South American continent, it is entirely unknown in Egypt, and Syria has never been visited by it. Greenland, also, is entirely exempt from this scourge. M. Andry, the French writer on this subject, says that January and August, the hottest and coldest months, furnish the fewest cases.

The symptoms of canine madness are very much the same in all cases, though varying somewhat in their manifestations. The first and most marked symptom is a change of disposition and temper so that the naturally good-tempered dog becomes sullen, morose, and snappish, and those which are usually kind and fondling, are changed in their manner to a state of reserve and extreme shyness, and seek retirement. Sometimes the change is so great, that the usually shy dog becomes very bold, but this is not nearly so common as the opposite extreme. Generally the mad dog shows a warning of latent disease developing, by this change of manner, for several days before it breaks forth with severity. The next symptom is the countenance, which becomes anxious and appealing, the eyes become blood-shot, and singularly bright and sparkling, with a slight tendency to distorted vision, or squinting is apparent, and such alteration in the usual appearance of the eyes and countenance are generally followed by mischievous propensities possessed by the animal in health. An array of symptoms now begin to establish quickly one upon another, until a lamentable spectacle is on view. The appetite suddenly becomes abominably depraved, lapping the urine, and licking around places where urine has been recently deposited by other dogs or himself. The animal will also, at this stage, devour his own, other dogs', or human excrement with a decided ravenous relish; he will also eat and swallow pieces of wood, stones, leather, rope, cloth, coal, and even pieces of iron, lead, or any other mineral, etc., small enough for deglutition; in fact, any kind of filth or dirt that comes in his way is swallowed with avidity.

This symptom alone is characteristic of hydrophobia, and is amply sufficient to justify any man in giving his opinion to this effect, so says Professor Lagarris, Pasteur Institute, Chicago, Ill., who also adds that on making post-mortems on animals supposed to have been affected with rabies, the contents of the stomach always play an important part in his decision, and always where lesions of rabies are found, the stomach is partly filled with stones, gravel, pieces of wood, and other indigestible

material. The next important symptom is one which is also considered most demonstrative, viz., an insatiable thirst, a pitiable craving for water or any other liquid, which is swallowed eagerly, the animal pushing his head, over muzzle, up to the eyes into the vessel containing the liquid, in his frantic attempts to quench his burning thirst. He will wallow through, and even swim across ponds or streams of water, throughout the whole stage of the game.

The animal now becomes exceedingly restless and irritable; he wanders aimlessly around from place to place, having apparently a strong desire to do something, and not caring what, so that he is not quiet, seems to be afraid of being left alone, appears to apprehend some coming danger, will look wistfully and anxiously up into his master's face, as if beseeching his aid and protection, then he will suddenly fall down and lick his owner's feet, imploring him, as it were, to help him out of some impending danger, after which he will slowly rise and wander around the room, never walking in a straight line, but in zig-zag fashion, will crowd around behind chairs or other articles of furniture, and attempt to pass between them and the wall, knocking them over in his hurry. If he is confined by a chain he attempts to gnaw and chew it to pieces, if by a door he vents his fury on that. In this state he knows not the sensation of ordinary pain, as he will bite a red-hot poker if presented to him, exactly as if it were a cold one. In drinking, he will usually upset the stock of fluid, in his great hurry to imbibe. He will commence barking as if angry, at the approach of some stranger, then suddenly changing to a voice of joy and ecstasy; then he will whine as if asking for something, then change again into a melancholy, dismal howl, as if lost, or that approaching trouble was at hand; then an interval of complete naturalness will pervade for a few minutes, and the same symptoms will return with increased vigor, until the whole muscular system is wrapped in hideous, trismatic convulsions, which, however, soon disappear, and the howling commences again, which is readily recognized by an expert as that of a mad dog.

If allowed liberty, the rabid dog always seeks seclusion as the disease advances. He will leave his home and go off in a perfectly straight line along the street. The gait is peculiar, and characteristic of the rabid dog, and nothing else. It may be described as a shuffling motion, a mixture between a pacing and trotting movement, commonly known as the fox-trot. He holds his head in a perfectly straight line with the body, and looks neither to the right nor to the left. He will not go one inch out of his way to do any mischief, and will often pass through crowds of people without even thinking of biting them, and even if pursued by cries and hootings he takes no notice until he is hurt bodily, then he will wreak his vengeance on the offender, or anything else that comes in his way. But more frequently he will endeavor to escape his assailants, and reach solitude, where, once by himself, he will snap at imaginary objects, and will only attack real ones if placed in his way. This snapping at the empty air is also very characteristic.

The prevailing desire to roam and wander away, seems to me to be an instinctive attempt to get rid of the disease by muscular action, as rabies is spontaneous only in non-perspiring animals.

(To be Continued.)

TREATMENT OF OSSIFIC DISEASES OF THE JOINTS BY HYPODERMIC INJECTIONS.

By JUNIUS H. WATTLES, D.V.S.

(Read before the Missouri Valley Veterinary Association at Atchison, Kan.)

While I was attending college as a student, the question of treating bone spavin by some other method than the actual cautery, was discussed by a gentleman who was visiting the college, and myself. We reasoned that many valuable animals were disfigured by the fireing iron, and that if the same result could be obtained by some other method, it would be more satisfactory to both patron and practitioner.

The question to be answered was: Can a remedy or agent of any sort be injected into an articulation, that will produce an acute artificial inflammation, with the rapid deposit of bone cells necessary to form an ankylosis, and that will not cause supuration or some other complication or condition, which will be worse than the original disease? The points in question were considered by us, with all of the misgivings and fear of ridicule that a student attending college, and a gentleman in practice who had never attended any veterinary institution could have, as we felt that we were guilty of encroaching upon some of the traditions of the profession. The result was, however, that we determined to put in practice the theories which were evolved at that time, and I have done so with entire satisfaction to my patrons and myself.

The condition we know as spavin, is in my opinion identical with the condition known as osteo-arthritis in man, and nearly the same general pathology occurs in both cases, the result desired, however, is not the same, as in man motion is usually insisted upon even in cases where the articular cartilage is destroyed, to prevent ankylosis, while in our cases we desire complete ankylosis in as short a time as possible, with the exostosis reduced to a minimum.

Looking upon the process of repair that takes place in spavin as being identical with the process of repair that takes place in the repair of a fracture of bone, and that in both cases that absolute immobility is desired for the purpose of producing ankylosis, I have used plaster of Paris or starch bandages, and by readjusting them as the swelling subsided or they became loose from any cause, reduced the motion in a joint very materially, a plan that I have followed with advantage in those cases where it was impossible to turn the animal out to grass after operating.

It is necessary to give a brief resume of the general pathology of osteo-arthritis, in order that my reasons for treating spavin hypodermically may be made clearer.

There is first the injury whatever it may be, producing in

regular order congestion and inflammation, followed by exudation into the articulation, with attendant maceration and destruction of the articular cartilages. If from any cause this exudate is not absorbed, a fibrous organization takes place, preventing the union of the necessary reparative bone cells, and delaying ankylosis; but should this exudate be rapidly absorbed, it will allow the bone cells to develop faster and accumulate in a much smaller space, and thus reduce the size of the exostosis that is formed, as well as making it a compact mass, instead of the irregular porous bone tumor, with its numerous openings and channels, in which this exudate has organized and become a part of that we usually find in these cases.

Bone spavin, ringbone, and splint, have been treated by me since March, 1886, by the hypodermic injection of tincture of iodine. My method has been as follows: I confine the animal as required; clip away the hair and wash the part with hot water; use an ordinary syringe with a large needle, inserting the needle into the tumor, usually at its upper part, and loosening up the structures with its point, withdrawing the needle slightly and injecting about one drachm of the tincture, making several insertions of the needle in different parts of the enlargement and injecting about a drachm at each insertion, taking care not to enter large blood-vessels. The patient is kept in the stable for a week or ten days, and then turned out from six weeks to three months. A second operation is very rarely necessary; and unless the swelling becomes excessive immediately after the operation, no after treatment of any sort is required. No bad results of any kind have ever followed this method of treating this class of diseases at my hands. Complete ankylosis and termination of the lameness, in both spavin and ringbone, have always been obtained. There has never been the slightest suppuration. The enlargement does not increase materially in size, but appears to decrease, when repair is in progress, by the filling in below the enlargement with new tissue. I can cite individual cases, but it is unnecessary, as you have every opportunity to test its efficacy.

The stimulant and re-absorbent action of iodine is so well known that it requires but passing mention. The beneficial results obtained by the use of iodine hypodermically in the cases mentioned, is the result of both actions. By the stimulation of a low grade of inflammation, into an active form, it determines the rapid increase and multiplication of the reparative bone cells, and by its re-absorbent action it resolves the organized exudate into a liquified mass that is readily taken up and carried away from the part. From a general, diffused inflammation of the region, it becomes a localized inflammation, that is confined to the place desired.

I do not wish to be quoted as saying that *all* cases of spavin, ringbone, or splint can be cured by this method, but I do assert positively, that any one of these which are curable by any other method, may be cured quicker and with less deformity or blemish remaining, by the hypodermic injection of iodine than any other method that I have any knowledge of.

IS TUBERCULIN, AS ORDINARILY USED, TOO DELICATE A TEST? A REMEDY SUGGESTED.

By GEORGE N. KINNELL, M.R.C.V.S., Pittsfield, Mass.

Among careful men who have had the greatest experience, it is often a subject of serious and anxious thought whether or not the indiscriminate slaughter of animals condemned by the tuberculin test is advisable or even justifiable.

There is probably no practitioner, of any considerable experience with the agent, who has not at times quailed at his work; and thought with feelings of regret and misgiving of the many comparatively healthy creatures on which it has been his lot to pass the death sentence.

Personally I believe in thorough eradication of each and every case of tuberculosis, but there are many others who will welcome a more modified and less drastic method of handling the trouble so long as it holds out fair assurance of ultimately

getting the disease under control. During the past fifteen months I have had considerable experience in testing with comparative doses of tuberculin. The result has been that my belief has been shaken seriously in regard to some of the commonly accepted theories about the action of this substance, but I have also discovered what I think may be of practical and monetary importance in getting under control and finally stamping out the disease tuberculosis.

Before going further let me explain that when I speak of tuberculin I refer to Tibbertz Tuberculinum Kochii. By a small dose I mean two thirds of a minim ; a large dose, the ordinary one of from three to five minims. I will begin by stating what I believe to be the relative merits of testing with small and large doses and then endeavor to show grounds for what I say.

1. A small dose of tuberculin will detect the worst and every dangerous case in a herd. I know of only one exception to this rule.

2. A small dose will cause reaction in very advanced cases, where a large dose fails to react or at most only causes an attack of extreme prostration without any elevation in temperature.

3. A small dose will not, as a rule, cause reaction in the earliest stages or in cases that are but slightly advanced.

4. A small dose will not cause reaction in cases that have been slightly diseased and that may be said to have recovered.

5. While small doses will not at once detect every case in a herd, yet by annual or semi-annual tests dangerous cases can be detected as they develop, and this coupled with proper sanitary and hygienic regimen ought in time to result in the practical extinction of the disease.

It is a commonly accepted belief that when a badly diseased subject fails to react it is because her system is already so saturated with the poison that the addition of a little more does not make any serious difference. This must surely be a mistake. I have found it time and again that a dose of two-thirds minim (Koch's) will cause a considerable reaction in cows that are ex-

tremely diseased, and further I have only once known it to fail in doing so. And again if the commonly accepted belief is the right one, why is it that slight cases do not respond to a small dose, but require from four to six times a larger dose to get the reaction? I think the amount of reaction obtained depends on an entirely different condition.

It has been with me a subject of frequent notice that the highest reactions have been obtained from fat and plethoric animals, some of them badly diseased, others but slightly. Then again the cases in which the lowest reactions have been noticed have been noticed have been in creatures thin and emaciated, and whose vital energy has been at the lowest ebb, some of them slightly diseased, others extremely bad. Testing the latter varieties I can only compare them to a man attempting to light a stove having but little fuel in it, and the chimney stuffed with soot. There is not enough fat on the creatures to make a decent fire of, nor sufficient vital energy to cause draught enough to burn up what is there. In such cases a heavy dose will only snuff the candle out and leave us still in the dark.

Since January, 1894, I have tested in all twenty-three herds of cattle comprising a total of 415 heads. Here are the tests and results in tabulated form:

Herds tested with two-third minim.....	11
Total number of animals.....	180
Reacted.....	40
Slaughtered.....	33—All diseased.
Not slaughtered.....	7
Killed on suspicion.....	7
Found diseased.....	2—Very slight.
Found healthy.....	5

Tested with from two to five minims (Koch's) and with two cc. Bureau tuberculin:

Number of herds.....	12
Total number of animals.....	235
Reacted.....	51
Have been slaughtered.....	36—All diseased.
To be slaughtered later.....	15
Slaughtered on suspicion.....	3

Diseased.....	1—Slight.
Healthy	2
Did not react, but slaughtered.....	3—Extremely bad.
Did not react, but died a week later.....	1—Extremely bad.

As illustrating the different effects of small and large doses on animals in different stages of disease, I ask careful attention to the following chart. It is only an example, on a small scale, of what has been my experience generally :

DR. HENRY COLT HERD, PITTSFIELD, MASS. TESTED JUNE 5, 1894.

No. OF COW.	NORMAL.						
	12 P. M.	7 A. M.	11 A. M.	2 P. M.	4 P. M.	6 P. M.	
1	102						Not tested. Had calved that day.
2	103	103 $\frac{4}{5}$	102	101 $\frac{3}{5}$	101 $\frac{3}{5}$	101 $\frac{3}{5}$	
3	102 $\frac{1}{5}$	103 $\frac{1}{5}$	106 $\frac{1}{5}$	106 $\frac{1}{5}$	106	105 $\frac{3}{5}$	
		100 $\frac{1}{5}$	100 $\frac{3}{5}$	100 $\frac{3}{5}$	100 $\frac{4}{5}$	100	Great enlargement bronchial and mediastinal glands; abscesses both lungs.
4	100						Slightly diseased, lungs or liver. Had calved six days before.
5	101	101	102	103 $\frac{2}{5}$	102 $\frac{2}{5}$	102 $\frac{2}{5}$	
6	101 $\frac{2}{5}$	101 $\frac{4}{5}$	102 $\frac{4}{5}$	104 $\frac{3}{5}$	104 $\frac{1}{5}$	103 $\frac{1}{5}$	
7	not tested.						

Dose, two-thirds of a minim (Koch's).

TESTED JUNE 21, 1894.

No. OF COW.	NORMAL.					
	8 A. M.	4 P. M.	6 P. M.	8 P. M.	10 P. M.	
1	101 $\frac{2}{5}$	101 $\frac{2}{5}$	102 $\frac{1}{5}$	101 $\frac{3}{5}$	101	Disease both lungs and bronchial glands; posterior third right lung consolidated; section presents appearance of typical case of recovered contagious pleuropneumonia; large abscess on liver. A bad case.
6	101 $\frac{1}{5}$	102 $\frac{3}{5}$	105	105 $\frac{2}{5}$	104 $\frac{1}{5}$	

Dose, two-thirds of a minim (Koch's).

TESTED JAN. 6, 1895.

No. OF COW.	NORMAL.					
	10.30 P. M.	8.30 A. M.	10.30 A. M.	12.30 P. M.	2 P. M.	
1	100 $\frac{2}{5}$	106 $\frac{1}{5}$	105 $\frac{4}{5}$	104 $\frac{4}{5}$		Slight enlargement bronchial glands, dried up and calcareous. Bronchial glands slightly diseased, dried up caseous condition, milliary tuberculosis of liver. Glands slightly diseased, caseous nodule on right lung size of a hazel-nut.
2	101 $\frac{4}{5}$	105 $\frac{1}{5}$	107 $\frac{2}{5}$	106 $\frac{4}{5}$		
4	100 $\frac{3}{5}$	102 $\frac{3}{5}$	104 $\frac{1}{5}$	102 $\frac{2}{5}$		
7	101 $\frac{2}{5}$	102	102 $\frac{4}{5}$	102 $\frac{2}{5}$	101 $\frac{2}{5}$	

Dose, three (3) minims (Koch's).

It will at once be noticed that cows 3 and 6 readily responded to a small dose of the agent, had a high elevation of

temperature and were found very extensively diseased, while cow 5 did not respond either so quickly or so much and yet was only slightly diseased.

Again cows 1, 2 and 4 did not respond at all to a small dose, but when tested with a large dose they responded quickly and very decidedly, yet the lesions were but slight and in every case were of long standing. Cow 4 was fourteen years old. The bronchial glands in this cow and in cow 1, were enlarged to the size of a hen's egg, the caseous pus they contained was very much dried up, and in the case of cow one was so thoroughly impregnated with calcareous deposit as to make it a difficult matter to cut it with a sharp knife.

There is one clinical feature to be noticed in testing with small doses, a feature which was pointed out to me by Dr. Cooper Curtice, who examined all my small dose charts, and that is that the reaction does not set in so early by four or five hours as it does when larger doses are used. Consequently it is necessary to continue taking temperatures four or five hours longer than is ordinarily required when the larger dose is used.

There is one case of an animal very badly diseased which did not react to a small dose, but this creature had twice previously been tested with full doses, first with a tuberculin preparation sold by Metcalf, a few weeks later with 2 cc. Bureau tuberculin and five days later with one minim of Koch's tuberculin. It was noticed that after each of the first two tests the animal was much prostrated, the breathing accelerated and the appetite impaired, from which she took from a week to ten days to recover.

I am frequently asked to explain how I first came to use such an unusually small dose of tuberculin. The discovery was the result of a sheer accident. In the January, 1894, number of the *Veterinary Magazine*, there is an original article by Dr. A. E. Conrow, entitled "Tuberculin as a Diagnostic Agent." He says his method is similar to that used by Dr. Pearson. After details as to the preparation of tuberculin, he says: "Then with sterilized hypodermic syringe I inject 0.2 to 0.35 cc. of the ten per cent. solution regulating the amount by the size and condi-

tion of the animal.” Roughly speaking, this is from $3\frac{1}{3}$ to $5\frac{1}{3}$ minims. The solution being a ten per cent. one, gives approximately a dose of from one-third of a minim to one-half of a minim of tuberculin. This article I took as my authority and guide in making my first test, and as a matter of some interest I subjoin the chart of the herd with post-mortem notes. The autopsies were made in the presence of Dr. M. O’Connel, State Commissioner, the Pittsfield Board of Health and myself.

Shortly after this I met Dr. Pearson, and communicated with Dr. Conrow, and from them learned that the dose they use is 0.2 to 0.35 cc. of tuberculin. The statement that they used that amount of a ten per cent. solution was a typographical error.

W. F. MELTON HERD (DURHAM COWS), PITTSFIELD, MASS. TESTED FEB. 6, 1894.

	NORMAL.							
No. OF COW.	10 A. M.	5 P. M.	10 P. M.	2 A. M.	FEB. 7.			
88	99 ² / ₅	100 ² / ₅	102 ³ / ₅	105	MATURED COWS.	Slaughtered.	Diseased.	
Blank.	102	101 ² / ₅	103 ¹ / ₅	102 ² / ₅		"	"	
108	101	101 ² / ₅	103 ² / ₅	103 ⁴ / ₅		"	"	
101	99 ⁴ / ₅	101 ² / ₅	102 ¹ / ₅	103 ¹ / ₅		"	"	
90	100 ² / ₅	102 ¹ / ₅	104 ² / ₅	106		"	"	
77	100 ² / ₅	101 ² / ₅	103 ² / ₅	102		"	"	
44	100	101	100 ² / ₅	101 ⁴ / ₅		"	"	
94	99 ² / ₅	101	101 ² / ₅	103 ⁴ / ₅		"	"	
89	100 ² / ₅	101 ² / ₅	104	105		"	"	
24	99 ⁴ / ₅	100 ² / ₅	100 ² / ₅	100		"	Not Diseased.	
103	98 ⁴ / ₅	100 ⁴ / ₅	101	101		"	Diseased.	
117	99	101 ¹ / ₅	101	101 ² / ₅				
112	99 ³ / ₅	102 ⁴ / ₅	104	104				
34	101	101 ⁴ / ₅	103	105				
131	101	101 ¹ / ₅	101 ³ / ₅	101 ³ / ₅	YEARLINGS.			
Blank 1.	102 ² / ₅	101 ¹ / ₅	101 ² / ₅	101 ² / ₅				
132	100	101 ¹ / ₅	101	100 ² / ₅				
Blank 2.	99 ² / ₅	101 ¹ / ₅	100 ² / ₅	101				
" 3.	100 ⁴ / ₅	101 ⁵ / ₅	100 ⁴ / ₅	100 ⁴ / ₅				

The matured cows were tested with a dose of two-thirds of a minim (Koch’s); the yearlings with one-third of a minim.

NOTES ON TUBERCULOSIS.

By E. P. NILES, D.V.M., Blacksburg, Va.

(Read before the Virginia State Veterinary Medical Association.)

Before introducing my subject for discussion, let us inquire into the true standing of the veterinarian and endeavor to obtain a proper definition for the term. Until a few years back

the veterinarian was almost unknown in the United States, and consequently had no standing politically or legally or socially. Why the veterinarian has not enjoyed the same standing in every respect that his close relative, the physician, has, is simply because the proper definition has not been applied to the term veterinarian by the masses of people. The true veterinarian received, and does yet, to a certain extent, a "hard name" the moment he entered college, which requires years of trials and tribulations to live down.

The question naturally arises: What is a proper definition for the word veterinarian? Webster gives as a definition for the word, "One skilled in the diseases of cattle or domestic animals." I would say a veterinarian is one who is proficient in all subjects pertaining to veterinary science and has completed the prescribed course in a regularly organized veterinary college. Such men will command the same respect that is due any professional man; and I may add that such men are rapidly taking the place of the ancient "horse doctor," whose character had been in the main such as to give to the veterinarian the unjust reputation which has been so hard to live down, and which, to a great extent, still exists. The question may be asked, What bearing does the "horse doctor" have on the veterinarian? Simply this: By the majority of people we were, and are yet, to a great extent classed as horse doctors. It is almost an everyday occurrence for the veterinary practitioner to be addressed with: "Are you the horse doctor?" or "cow doctor" by some ignorant party. The time is now at hand when the veterinarian should command respect from all classes of people, for he is rapidly placing himself in a position to be classed among the public benefactors, in the way of suppressing and controlling contagious diseases among the lower animals, and indirectly among the human family. The hearty co-operation of the physician, however, is needed in this work, and, I am happy to say, our cousins are not slow to lend us their aid. I believe that the day is not far distant when the two professions will march hand in hand against the dreaded contagious diseases,

many of which affect man and beast alike. In some of these diseases it is first necessary to control them in the lower animals before they can be controlled in man. In this work the two schools of medicine alone cannot succeed. The co-operation of the State legislature is needed. The organization of an official body of scientific workers must be effected. Money must be provided for its use, for without the proper funds nothing can be done. The present Board of Health is not even allowed money with which to buy its postage stamps. How can the board be expected to accomplish any good results under such circumstances?

The most dangerous contagious disease that the veterinary and medical professions have to deal with at the present time is *tuberculosis*. I say it is the most dangerous of all the contagious diseases because it affects both man and beast alike, and because it is so frequently transmitted from the lower animals to man.

This, until recently, has been one of the hardest diseases known to properly diagnose in all of its stages; especially is this true in relation to the lower animals. It is hardly necessary to state here, however, that we now have a reliable and positive aid to the diagnosis of the disease in all of its stages, *tuberculin*, the *modus operandi* of which does not require a description at this time, for the subject of my last essay is still fresh in your memory. For the introduction of this agent our thanks are due Dr. Koch, of Berlin. For the good results of its use in this country and the practical conclusions drawn from such, all or nearly all credit is due the veterinarians. As has frequently been stated, we now have a means at hand by which tuberculosis can be practically stamped out both among the human family and the lower animals. With this end in view, the veterinary and medical professions are working together; yet there is room for them to draw still closer together. They should mingle together in each other's societies, thereby enabling them more effectually to co-operate with each other. When this is done the importance of thorough and careful legislation for the suppression and control of contagious diseases will at

once thrust itself upon our legislators. The two professions combined will carry with them much more powerful influence than we can hope to carry alone, especially while our numbers are so small.

The question of legislation for the purpose of stamping out tuberculosis is an important one. Already some of the states in the Union have enacted laws for the purpose, while a few of them are quarantining against each other, and others are quarantining all herds known to have tuberculous animals among them, without any authority other than the general law controlling such contagious and infectious diseases. What the result of such action on the part of the State Board of Health and the State veterinarian remains to be seen. The effect of one State quarantining against another is to almost ruin the cattle industry in the quarantined district. Such a state of affairs exists between Vermont and Massachusetts. The latter has a law purporting to control tuberculosis, but its workings are anything but satisfactory. The law provides for the appointment of inspectors, but does not say that they shall be veterinarians, nor, in fact, medical men of any kind. The consequence is that incompetent men are appointed, more for their political value than anything else. Many of them, I am told, do not know a tubercle from a piece of normal tissue, neither do they know anything about the tuberculin test. They examine in a general way suspected herds, and pronounce them healthy or diseased according to their best common judgment. Qualified men are condemned for doing their duty, and ignorant men are put in their places. The compensation for animals destroyed amounts to little or nothing, consequently the dissatisfaction is great.

Legislation on the subject should not be gone into hastily as evidently has been the case in some of our sister states. Such legislation is bound to meet with opposition, and finally defeat. All sides of the question must be carefully weighed, and provision made for any point that is likely to arise in the workings of the law.

Our own State should not be the last to legislate on the subject of this loathsome disease. Our next legislature should, in some way, be made to see the importance of stamping out the disease, and induced to properly organize the State Board of Health and give them power and money to act in the matter. To procure the necessary laws will require the combined efforts of our society with the medical society of this State, as well as our own individual efforts. It is also necessary that the breeders of the State should join us in our efforts.

As I have stated in a previous article, all dairy and breeding herds should be put through the tuberculin test. It is also advisable to make the tests as far as possible on all private herds, and the diseased cattle, wherever found, destroyed. Such animals, of course, must be paid for by the State. If the owners, however, could be made to look at the matter in the proper light, they would see that it would, in the end, be much more profitable to destroy all diseased animals at once, even though they received nothing for them. By keeping one diseased animal in the herd, the disease is constantly being communicated to the other animals, until finally the whole herd may become affected. Besides the danger of communicating the disease to himself and family would at once be avoided, by the destruction of the diseased animal or animals. It may be argued that the State cannot afford to pay for these diseased cattle. If the State has not now got the money at hand to carry out the work, a slight increase of taxes would readily supply the funds, and no one would or ought to object to having his tax only slightly increased if he knew that it was for the purpose of making his herds more valuable and almost entirely cutting off his chance to become a victim to tuberculosis. It would seem, however, that extra taxation is entirely unnecessary, for the amount required for the work would grow less after the first year or two.

The following figures show the approximate cost of exterminating the disease: In 1892 the estimated number of cattle in Virginia was 406,137. Supposing the number has remained

stationary, and estimating their value at \$15 per head, the total value is \$6,104,055. If 2% of these cattle are tuberculous, we then have 8,138 tuberculous cattle in Virginia. These cattle in health represent \$122,070. Each one of these diseased cattle is capable of communicating the disease to one or more healthy individuals; in fact, one animal may affect a whole herd. But suppose the infection is in the ratio of one to two of every diseased animal each year. We will suppose then that in the year 1894 we have in Virginia 8,138 animals; at the above ratio of infection we will have in 1895, 10,350 tuberculous animals; in 1896 we will have 14,466. It will be seen that the number of tuberculous animals is rapidly on the increase, even with this small ratio of infection. If the true ratio of infection could be gotten at, however, I am of the opinion that it would be much greater. What other disease can produce such appalling figures? The infection does not stop with animals of the same species, but may extend to nearly all warm-blooded animals, and especially to the human family. I have stated in a previous article that fifty per cent. of the cases of tuberculosis in the human family came from the bovine species. If one person for every ten tuberculous cattle becomes infected from that source each year, we will have 813 more cases of tuberculosis in the human family in 1895 than in the year previous, and 1,085 in 1896, and so on year after year, to say nothing of the spread of the disease by those so infected.

Let us see what would be saved to the State and the private stock owners each year by stamping out the disease.

Let us suppose that one-half of the tuberculous animals are destroyed at once. We would have left but 4,969 diseased animals to spread the disease. The number infected by these, according to the above ratio, would be 1,356, making a total number of 5,425 affected animals in 1895, as compared with 10,850. In 1895 we will slaughter the remaining half of the original number, thus reducing the number of diseased animals to 1,356. In 1896 the infection will thereby be reduced to 452 animals, so that in the third year of our work we will have but

1,808 animals to slaughter, and at the same time we have gotten rid of the principal source of infection in this short time, thus increasing the value of our herds almost if not quite two-fold, and greatly lessening the danger to human life. In the first year we have saved the State, by preventing further infection, \$20,340. In the second year the amount saved will reach \$81,375. In the third year the amount saved will reach the surprisingly large sum of \$199,870. It will also be seen that the number of cases of tuberculosis in the human family will be greatly diminished.

Now, suppose the State pays \$10 per head for each animal slaughtered. The sum required would be \$99,460, averaging about \$33,000 per year for the first three years, after which \$10,000 per year would carry on the work of the State Board of Health very nicely.

It has been shown above that the actual amount saved over and above the amount expended for the destruction of these animals is \$203,125, to say nothing of the human lives that are annually saved.

This is a question that concerns all classes of people alike, and the State can no longer afford to defer action on the matter. The disease is assuming alarming proportions, and unless something is soon done tuberculosis or consumption will be almost as common as common colds.

I have endeavored to show that the veterinarian is now in a position to demand a hearing on these subjects that so constantly menace the public health, and that prompt action on the part of our next legislature will do much to advance the public welfare and the cattle industry of our State.

THE UNEXPECTED RECOVERY OF A CASE OF SUNSTROKE.

By LAWRENCE CAMPBELL, D.V.S., Chicago, Ill.

(A paper read before the Illinois State Veterinary Medical Association.)

MR. PRESIDENT AND GENTLEMEN:—The subject upon which I have written is entitled: The unexpected recovery of a case of sunstroke, which occurred in my practice two years ago last July. In bringing this case to your notice, I shall not

attempt to describe the disease in full, as the etiology and symptoms are well known to you all, but it is the unusual treatment which I wish particularly to set before you, the result of which surprised me greatly, in fact I have not recovered from it yet; the dose of the agent used was so very much larger than any text-book sets down as being safe to administer, and so much larger than any practitioner has ever before given, so far as I have been able to ascertain, that I have decided to place the matter before this association for discussion. To explain the results of this unexpected recovery from a toxic dose, I must first give the history of the symptoms of the case, as I found them from hour to hour after reaching the patient.

I was called by telephone about 6 o'clock P. M. one evening in July, 1892. The call stated that one of a heavy team of draught horses, belonging to a customer of mine, had fallen on the street about an hour previously; as numbers of horses were falling with sunstroke daily, sunstroke was uppermost in my mind. I ascertained the symptoms over the "phone," and diagnosing the case as one of sunstroke, I ordered the immediate application of quantities of water externally, and ice to the brain. As the case was fully five miles away, I was unable to see the patient for nearly an hour, so was unable to find out the extent of the height of temperature at that time; however, upon reaching the patient at 7 o'clock P. M., I found the temperature $105\frac{1}{2}^{\circ}$, the pulse rather uneven, and frequently (I do not recollect the number of beats per minute) the breathing was quick and hurried, the horse seemed to be in a semi-unconscious condition and laid quietly upon his side. Upon examination I found him to be a gelding, six years old, and weight about 1,450 pounds. I ascertained from the driver that he had had a slight attack the year previous. I immediately mixed him a dose of all the stimulants I had, and sent the driver to the nearest drug store, which was a mile away, for a fresh supply. At 8 o'clock P. M. I found the temperature 103° , and discontinued the external application of water; at 10 o'clock P. M. he was struggling to rise but was not quite strong enough. At this time I admin-

istered two ounces of spirits of nitrous ether. At 12 o'clock P. M. he was rolling upon his chest and eating little hay, and at 2 o'clock A. M. he came a number of times so near rising that I thought it safe to leave him in care of the driver and a friend of his, as he was gaining strength so rapidly I had no doubt of his being upon his feet before sunrise, and leaving some stimulant with the men, to be given during the night, I went home. At 7 o'clock A. M. I was called again and was told that the patient was worse, and to come up right away. Upon reaching there I found that my expectations had not been verified and that he had not been able to rise, although he had nearly done so with assistance many times. I found upon examination that the temperature was $102\frac{1}{2}^{\circ}$, the pulse even, but weaker than before. He was able to roll upon his chest, but would fall again unless held up. I administered more stimulants, and as there was a large sewer being built near us I went over and procured eight men to help us try to lift him up; there were then eleven of us there, and we used our combined efforts on him, but were unable to stand him up although he helped himself as much as possible. As the sun was getting hot we borrowed some boards from the sewer builders and built a shed over him, and poured buckets of water over him occasionally. At 10 o'clock, A. M. he was no longer able to roll upon his chest, and the pulse was weaker and faster than at 8 o'clock. I gave more stimulants, but they had no effect. At 1 o'clock I gave three ounces of aromatic spirits of ammonia and one drachm of the fluid extract of nux vomica in solution. This dose had no effect, and as at 2 o'clock P. M. he could not throw his head more than a foot from the ground, I decided that I would destroy him, as I felt confident he would never recover. As I had no fire-arm with me I decided I would poison him, and examined my medicine case to see what would, in my opinion, do the work. I found that I had two agents that would be powerful enough, I thought. One was a full ounce of the tincture of aconite root, and the other the remaining seven drachms in an ounce bottle of fluid extract of nux vomica. (You will remember that one drachm of nux had been given

one hour previously.) I decided upon the nux, for two reasons: First, because I thought that seven drachms of the fluid extract ought to contain a sufficient quantity of strychnine to kill him; and secondly, if it did not that it might so tone the nervous system as to give him sufficient strength to rise. But I expected this thought was far from being realized. I did not inform my assistants what I intended, as I did not want the owner to know that I had given him up and destroyed him; therefore I only told them that it was time for another dose, and after mixing the drug with about a pint of water, and with many sorrowful feelings I poured the whole seven drachms down his throat. I expected to get symptoms of poisoning in ten or fifteen minutes, but the symptoms were slow in appearing, and as time passed on I racked my brain, wondering why he didn't go into spasms and die. He had made no move in fifty minutes after giving the dose, until suddenly he made a spring, gained his front feet, sat for an instant on his haunches, and fell over on his side. His exertion did not seem to exhaust him, and we three stationed ourselves in position to assist him, if he should try again. We did not have long to wait, for suddenly he was up again, and by dint of lifting and pushing he stood upon his feet. I have seen many weak horses, but it has never been my experience, either before or since, to see one show such weakness as this one. All his limbs trembled beneath him, and for fully an hour we had to hold him and prop him up before he was able to stand alone. At this time it was 4 o'clock, and as there was a small wood about fifty yards distant we decided that if we could get him into it that we would leave him there for the night. We started him along, and at the end of about thirty minutes we had him in the woods, where we left him. The following morning it was raining hard and was quite cold. I found the patient standing in the identical spot where we had left him. He had not moved a step. I tried to move him but he seemed to be rooted down. As I thought the cold rain would do him much more harm than good, and as I did not think I could move him to shelter, I went to some of the

neighboring houses and tried to get a rubber blanket to put over him, but although they had them they would neither lend or sell them. I then determined that I would try to take him home (about two and one-half miles), and if he fell I would get a gun and shoot him. I picked up an old piece of rope, attached it to his neck and tried to lead him, but I could not get him to budge. I then removed the rope and whipped him with it gently. At this he tottered off a step or two. I then replaced the rope on the neck, and he started after. His action was that of a horse about one hundred years of age. I found for the first mile that unless I allowed him to rest at the end of about every block he was completely played out. But on the second mile he limbered up and gained strength, and by the time we had reached his barn he was walking almost as well as ever. Upon getting him under shelter, I made a careful examination and found much to my surprise, and disappointment, that he was totally blind in both eyes; pupils dilated. I could not make up my mind what to do for this condition, so did nothing, but prescribed drachm doses of nux with two ounces of nitrous ether every four hours, for his general condition. The next day I found him so much stronger that I decided to stop this treatment and try to do something for the eyes. I had been informed, previous to this visit, by two M.D's, that in the human subject, if blindness followed sunstroke, and continued for one hour, that the patient would be permanently blind. Regardless of this, however, I decided that it would do no harm to try to do something, and I decided upon potassium iodide 3 ss. in solution, three times a day. His condition at the end of a few days did not improve. About this time I told a friend, Dr. E. L. Quitman, about the case; as he had a call in the vicinity, we visited the patient together. Dr. Quitman suggested that I make the dose stronger by the addition of one drachm of iodine crystals. I wrote the following prescription:

℞ Iodidi Cryst. 3 i.
Pot. Iod. 3 ss.

Give in two ounces of water three times a day.

At the end of ten days the pupils were slightly smaller, and he seemed to be able to see daylight. Two weeks later he was entirely cured and could see as well as he ever did. He is at the present time making one of a heavy team, and has been since he recovered his sight. He is still owned by the same firm, and is considered one of the best horses out of a total of twenty-six. His eyes are first-class, and he has never experienced another sunstroke, but has worn a damp sponge in hot weather. What I wish particularly to call attention to in this report is the great dose of the fluid extract of *nux vomica* that this horse took without one symptom of poisoning. It is a well-known fact that nearly all drugs can be given in larger quantities in many subjects than are usually set down in textbooks or taught in colleges; but as the dose of *nux* is from 3 ss to i. I should like to create a discussion as to how this animal was able to get away with seven drachms, and not only live but have the drug act upon him in such a way, and to such purpose, as to enable him to support himself in one hour from the time of giving the medicine, and after being down twenty-one hours and being unable to raise his head more than twelve inches from the ground at that time. Perhaps *nux* in very large doses would be of great benefit in similar cases where great prostration is present. To conclude, I can only say that it was "dumb luck" on my part, and that if I ever had another such case I should probably hesitate a long time before I should dare to repeat the treatment.

(A few remarks as to the action of *nux vomica* and its contained alkaloids will not be out of place.)

Strychnine is found in the crude drug (which is equal in strength to the fluid extract) in the proportion of one per cent. *Nux vomica* also contains two other alkaloids, namely, brucine, which is one-twelfth as strong as strychnine, and igasurine, which is one-sixth as strong as strychnine. The dose set down by Dr. Withers, in his lectures at the Chicago Veterinary College, of strychnine by the mouth, is gr. i. to ii. By Finlay Dun, gr. i. to iij. One ounce of fluid extract of *nux vomica* contains

4 80-100 grains of strychnine. Finlay Dun states that in a case of paralysis in a four-year old horse, following acute staggers, he administered four grains of strychnine twice daily in bolus, and without toxic effects. Later he increased the dose to five grains twice daily. This dose had no poisonous action. The animal improved under this treatment, but not fast enough to suit the owner, who had the patient destroyed. The smallest dose known to have killed a human being is one-half a grain. The smallest dose known to have destroyed a horse, that I can find recorded, was five grains, given by the mouth, the animal dying in eighteen hours. Strychnine tones up the muscles by stimulating the motor and vaso-motor tract of the spinal cord, the centres of which are located in the medulla. It also tones the heart; this is done by stimulating the motor ganglia. It stimulates the respiratory movements by exciting the spinal and medullary respiratory centres. It is excreted mostly unchanged by the kidneys, and in full doses it dilates the pupils.

REPORTS OF CASES.

CYSTIC CALCULUS.

By F. H. FARMER, D.V.S., Washington, N. Dak.

On July 5th last I was called to see an 18-month's old percheron colt. Upon examination I found the animal in considerable pain, breathing rapidly, pulse increased in frequency, and weak. He would strain frequently, with a desire to urinate manifested by stretching himself out, kicking at his belly, groan and lie down in pain. There was incontinence of urine, which flowed over the thigh and legs, excoriating the skin. The owner informed me that the colt had been ailing for about four months, and had gradually grown worse from the first time he had noticed anything wrong. After emptying the rectum with an enema, I proceeded to examine the bladder. The oiled hand passed into the rectum could easily detect a large calculus in the bladder, so large that it obstructed the free passage of

fæces. I concluded an operation was impossible, owing to the extraordinary large stone. Two days later the colt died.

Post-mortem Examination.—On opening the abdomen, all the urinary organs in a healthy condition except the bladder, the external surface of which presented a dark-red appearance. On opening the bladder I discovered a large pear-shaped calculus, which weighed twenty-seven ounces; it measured in circumference, antero-posterior, 14 inches; lateral, 11 inches. The bladder also contained a small quantity of urine, and showed signs of chronic cystitis throughout the entire organ.

ROARING—TEMPORARY RELIEF.

By W. C. SIEGMUND, D.V.S., House Surgeon.

In the fall of the year 1893 a bay mare, 7 years of age, was brought to the American Veterinary Hospital, suffering from chronic roaring. The owner had bought the horse recently, and asked for treatment.

Upon observation, the animal was found to roar upon the slightest exertion, and could not be driven out of a walk. Upon manipulation of the throat, there were found no swellings, but the larynx was abnormally firm, resisting all pressure. The pulse and temperature were normal when the animal was at rest. The diagnosis made was that of ossification of the laryngeal cartilages. As to the treatment, the owner was advised that no operation or medicine would cure the trouble as far as the organ itself was concerned, but that the animal could be made useful by the permanent insertion of tracheotomy tube.

The owner consented to an explorative examination of the larynx, and the insertion of the tube. The animal was accordingly casted, and secured in such a manner.

An incision was made through skin, the adjoining tissues dissected away until the cricothyroidian membrane came to view. The neighboring blood-vessels were ligated and parts rendered antiseptic. An incision was then made through this latter membrane, exposing the interior of the larynx; the mucous membrane was found to be thickened, the vocal cords flabby, and the car-

tilages, the seat of an osseous deposit, with ankylosis of their articulation. The flabby vocal cords were removed, the tracheotomy tube inserted, and the animal allowed to get up. The animal breathed much better, and after a few days the tube was removed and inserted into the trachea at the upper third of the neck; the first wound was allowed to heal.

The owner took the animal home, and was advised to remove the tube at least once a day and clean it and the wound,—oftener if necessary. He reported at times that the mare was doing well, doing her daily work, and stating that it was necessary to enlarge the opening in the trachea on several occasions. He brought the mare to the hospital; she was seen to be in fair condition in the month of October, 1894. Then, to our great surprise, he brought us the trachea and larynx of the horse two or three weeks later, to be shown to the class and preserved as a specimen. He reported that as he had no use for the mare this winter, he had given her to some parties to keep. These parties had not followed the directions given as to the care of the tube, and had let the tube clog with mucus and filth. Thus the animal was forced to breathe through the larynx, which had grown more firm, besides atrophying and this breathing becoming laborious, caused the mare to choke, throwing her into convulsions, at which the parties became very much alarmed, and had her destroyed.

The specimen exhibits all the laryngeal cartilages more or less the seat of an osseous deposit, thickened mucous membrane and submucous tissues, atrophy of all intrinsic muscles, and ankylosis of all the articulations. The trachea exhibits at the point of opening a chronic inflammatory condition, with thickening of the mucous membrane, and infiltration with fibrous organization of the submucous tissue. The post face of trachea likewise exhibits a thickened condition of the tissues, at the point corresponding to the lower end of the tube. The thickening, well defined, had caused considerable pressure on the cartilages when the tube was inserted, and thus cause a distortion in the shape of the organ.

A CASE OF RUPTURE OF THE SESAMOID LIGAMENTS.

By JOHN MINCHIN, V.S., Goshen, N. Y.

On the morning of March 22d, I was called to see a case of unusual interest, as it is the first I have met in my practice of several years. On that morning Daniel Conklin, living on the Young's farm (3) three miles from Goshen, hitched up his team to take his milk to the condensory, four and a half miles. When he arrived there he found one of his horses quite lame in the off hind leg. Examined foot but could find nothing—horse getting lamer all the time. When about a mile from home he stopped, not yet knowing what had happened—he discovered for the first time blood on the ground, the horse was standing on his hind *pastern bones*, the feet entirely separated from the joint as perfectly as *per. knife*, only held by about (2) two inches of the skin—although he had yet a mile to get home, the horse walked there on those nude extremities with the hoofs flopping in every direction.

Mr. Conklin owns the horse two years and he never showed any signs of hind trouble before. The bleeding was not profuse, which makes the case somewhat more confusing. There were many visitors to see the animal previous and subsequent to his death which I ordered.

A FEW CASES RECENTLY TREATED.

By. G. L. Hagenburger, D. V. S., Brooklyn, N. Y.

I.—Bay gelding, eight years. Fibroma in the occipitòlatloid region, size of a boy's head, hard and indurated, animal being unable to turn its head freely, Owner would not lay up the animal for an operation, and being a rather poor place to obtain proper drainage, used a galvanic battery (eighteen cells) with a Sol. of Iod. Pot. to the sponge electrodes applied to the enlargement directly and its surroundings for five days and afterwards substituted Tr. Iodine on my electrodes. Subjected the animal to three more seances, after which the tumor disappeared entirely by the chatophoretic action produced by the currents

along with the absorbents used in destroying the cells of the growth by a chemical poultice.

II.—Gray mare, six years. Found pulse sixty per minute, weak, respiration, six; conjunctive deeply injected, extremities cold, head hot, down and unable to move, left fore leg cramped, unable to straighten it out. Animal was in that condition for one hour before my arrival. I inquired into the history, no information from attendant who was present at that time except that he was left in charge after the owner left.

Diagnosis.—Œdema of both lungs and cerebral congestion. Cause, at that time unknown.

After hunting up the owner for a history, was told that the animal had suffered from slight attack of colic in the morning, and the attending veterinarian left a prescription to be given in case of a return of pain. Contents of prescription consisted of

℞ Tr. Opii, ℥ iii,
Ether Sulp., ℥ iii.

Just one dose; no other direction.

Was told when the draught was given that the animal was coughing severely, afterwards, and immediately went down, breathing heavily until found by me in aforesaid condition.

Cause.—As above seen, the draught was not diluted, and being a large dose, gained access to the trachæa and large bronchial tubes and lungs proper, a large area of absorption for the mixture given, causing the above stated symptoms.

Treatment.—Artificial respiration by means of wire brush, attached to negative and positive pole, farradic battery, two cells) to the costal region, saturated with a saline solution, which gave the following results:

In five minutes, pulse slightly fuller; respiration, 8; cramped and fixed foreleg, straightening gradually; perspiration over some parts of neck; œdema of eyelids disappearing.

The current was applied along spinal column, negative pole, positive pole, over the region of pneumo gastric nerve. Warm mustard water applied to extremity with friction, and saturated

cloths applied to them. One injection of 10 oz. saline solution intravenous.

Ten minutes, pulse 70, and fuller; respiration same; eyelids opening; slight rigors; trying to pass urine; chateber was used and about one quart taken away (high color and aromatic); hardening of sub-maxillary gland made its appearance, which increased to the size of a chicken egg. Animal was turned.

After twenty minutes another saline injection and general faradization of chest and costal region. Pulse, 55; respiration, 9, and steterous; very much forced inspiration; expiration short and quick; froths from nostrils, mixed with blood; paroxisms of coughing; tongue hanging out, and inability to swallow, being cold and apparently paralyzed.

Thirty minutes, same; the current stopped for five minutes, then applied again as before. Two hours after rigidity ceased; pulse fuller; respiration increased to 10, and easier, extremity beginning to get warmer; costal muscles assisted greatly in respiration; afterwards the animal made several attempts to raise its head. I remained during the night subjecting the patient to several more treatments of farradic current after which he recovered towards morning from immediate danger. I left him then with a cardiac stimulant, but a severe case of bronchial inflammation was the result, from which the animal recovered under the ordinary treatment.

Please notice the enlargement of the submaxillary glands which disappeared the following day. Will some experienced practitioner offer a cause as to that, as I am in the dark on that point? I may say that since I am using farradic treatment in all cases of pulmonary congestion and apparently with marked results, as well as in other complications, such as azoturia and severe colics, where a break evacuation of the intestines is promptly desired. In azoturia farradization over the hard, rigid muscles, as well on electrode, placed in the rectum, (which I first fill with a saline solution) after which I often get the desired result in from twenty-five minutes to one hour. Those gentlemen who had similar experiences please report them if time will al-

low. Those who have not tried please don't ridicule but try it and criticise afterwards, in that way an all around benefit will be the result as no evil consequences can follow.

CORRESPONDENCE.

PLEURO-PNEUMONIA IN THE UNITED STATES.

Editor AMERICAN VETERINARY REVIEW.

DEAR SIR:—In the editorial of your February issue, you draw attention to the fact that several times within the past year our cattle exported to European ports have been condemned as being affected with contagious pleuro-pneumonia.

The authorities of the Bureau of Animal Industry at Washington deny the existence of said disease among the cattle of any of our States during the past two years.

In view of these conflicting statements, the veterinary profession of America is interested and justified in asking "When is the truth?"

I will, in the first place, briefly refer to facts within my own knowledge, and confine these statements to Long Island. It will be admitted by all that a large percentage of the cattle on this island were in 1879 infected with contagious pleuro-pneumonia, and were so for at least twelve years prior to that time, having the identical specific lesions, symptoms and history special to and typical of this disease. I had no difficulty then in recognizing and diagnosing my old friend, with whom I had had many a tilt in Scotland, before the stamping out process was ever thought of, and if we did not succeed in saving the lives of many, we certainly had better opportunities then of noting the various phases and progress of its history and peculiarities than the modern veterinary butcher ever had.

When the stamping out process began on this island in 1879, I, with many others, was very skeptical as to its ultimate success as a means of eradicating this disease, for the following reasons:

1. It had been allowed full sway among all classes of cattle

for seventeen years. 2. The animals were housed in wooden stables with contaminated surroundings, which it would prove impossible to properly disinfect. 3. The insidious character of the disease and the difficulty of preventing the introduction of infected animals.

But to-day I can state for a fact that there has been no case found on this island during the past two years. I had been anticipating such a case and have put myself to considerable trouble in inspecting suspected herds and suspicious carcasses by post-mortem examinations, but not one outbreak have I detected up to date. If the "stamping out process by the pole-axe" has been so eminently successful in this district, the chief centre of contamination, I am justified in thinking that it has been so in other parts of the country, and so I do believe the United States of America, to be for the past two years, and up to date, free of this bovine pest.

In the face of these statements, it matters not, in my opinion, what are the macroscopical or microscopical appearances of the lesions found in the lungs of our American cattle by European experts. The most important and essential link in the history of contagious pleuro-pneumonia is missing, and until this link is found to exist in this country, all other pathological appearances are not complete or conclusive evidence that said cattle had been affected with this disease.

Several animals are reported as being condemned from various cargos at different times during the past two years, and one is justified in assuming that those cattle were drawn from various States, hence there must be several infected centres. If that were so, not even Yankee ingenuity could suppress the knowledge of their existence and location for such a length of time.

There are many like me in the veterinary profession, and others in this country, who did not believe that the stamping out process would be a success, and would be only too ready, at this date, to back up our prophecy with facts, did they exist, and would now say, "I told you so."

Now look at this controversy from a purely professional

point of view. I understand that our English and Belgian expert friends found lung lesions of a pronounced character as regards extent of invaded tissue. Assume that these animals were slaughtered twenty days after leaving their original starting point, they must have been then affected, if this is contagious pleuro-pneumonia, and at the time of shipment must have been observably sick animals, with a temperature of 105° F., and that very careless inspection would detect them as unsound, and it would be expected that many would be sick and a few dead at the end of the voyage.

The incubation stage of this disease does not, in my experience, last over from one to three days, when then there are found lung lesions readily detectable on physical examination, coupled with the characteristic appearance exhibited by the live animal.

No typical case of contagious pleuro-pneumonia was ever limited to one animal, providing that animal was allowed to freely cohabit with others during the various progressive stages of the disease.

In the absence of this "missing link," the pathological condition found in the lungs of these animals cannot be those of contagious pleuro-pneumonia contracted in this country.

What are they? If we take a little history into our confidence, I think you will agree with me that they are due to an acute attack of bovine tariff pneumonia of a sporadic character.

L. McLEAN, M.R.C.V.S.

CORRECTION.

Dr. A. Liantard.

NEW YORK, March 8, 1895.

DEAR SIR:—I have just received a copy of the March AMERICAN VETERINARY REVIEW, and in it I notice a review of Hoare's book.

I sent you the copy, and so this house should be recognized instead of Balliere's, or at least along with Balliere's. I presume the fault lies with the proofreading, for I do not believe you would be so discourteous.

Very truly yours,

For MRS. JENKINS.

J. IRVING MURRAY, Jr.

It is with pleasure that we give Mr. Murray full acknowledgment of our oversight. Hoare's book is published in America by his house.

MALARIAL POISONING, OR SLOW FEVER.

Editor AMERICAN VETERINARY REVIEW :

Since my article on Malarial Poisoning (slow fever), I received a letter from Dr. G. A. Johnson, Sioux City, Iowa, in reference to the bottom disease of the Missouri bottom, and that it is of a miasmatic nature, and so serious that most veterinarians and horse owners have come to the conclusion that it very seldom pays to treat a case. Dr. Johnson has come to the conclusion that bottom disease is a cirrhosis of the liver due to miasmatic poisoning, and that the disease as seen in horses quite closely resembles malarial cirrhosis of the liver in man. With this letter from Dr. Johnson I received a copy of a report of this disease, by Dr. Fairchild, which I think ought to be sent to the AMERICAN VETERINARY REVIEW for publication. It is the first article of its kind I ever read, and is very interesting. Dr. Fairchild is Professor of Therapeutics and Pathology in the State Agricultural College of Iowa, and I should like to see the publication of the report in the REVIEW for the benefit of the profession. Possibly the editor knows of Dr. Fairchild, and could get his permission to publish it.

Yours truly,

Centreville, Queen Ann Co.,

Maryland.

H. S. ADAMS, V.S.

COLLEGE COMMENCEMENTS.

AMERICAN VETERINARY COLLEGE.

The closing exercises of the twentieth session of this institution were held on March 25, 1895, at Chickering Hall, with the usual display of flowers, music and so forth that are presented at such meetings.

The conferring of diplomas was carried out by Dr. F. D. Weisse, President of the Board of Trustees. The illness of

Professor Liautard preventing him from calling the names of the successful candidates, the same was done by Professor Coates, as follows :

Augustus Hull Blake, Richmond Hill, N. Y.; Homer Harris Butler, New York, N. Y.; Harry Baker Cox, Merchantville, N. J.; Joseph Francis Devine, New York, N. Y.; Martin Joseph Dair, New York, N. Y.; George B. Gillmor, Pittsburg, Pa.; Robert Johnston Halliday, Jersey City, N. J.; Frank Reed Hanson, New York, N. Y.; Edwin Allen Hogan, Bayonne, N. J.; Moses Isaae, New Haven, Conn.; Nicholas John Kaiser, Newark, N. J.; James Michael Laffan, Irvington, N. Y.; William Henry Lawes, Jr., Shrewsbury, N. J.; Aquila Mitchell, Skaneateles, N. Y.; John Joseph Moynahan, Holyoke, Mass.; Francis Theobald O'Sullivan, New York, N. Y.; Bryer Hamilton Pendry, Brooklyn, N. Y.; Clarence R. Shults, Ogdensburg, N. Y.; Aaron Silkman, Goldensbridge, N. Y.; Wright J. Smith, Kingston, N. Y.; John Newkirk Wrong, Sedalia, Mo.

The prizes were then presented in the following order :

The Trustees' Prize for the best general examination, to Aquila Mitchell, D.V.S., of Skaneateles, N. Y.; the Alumni Prize for the second best general examination, to Frank Reed Hanson, D.V.S., of New York City; the Faculty Prize for the best practical examination, to Frank Reed Hanson, D.V.S., already mentioned, and who received also the Senior Anatomical Prize, The Junior Anatomy Prize was granted to Mr. Laddey for the best examination in that department. The Prize of the Class Association was given to Martin Joseph Dair, D.V.S., of New York City.

Of the beneficiaries which are offered by the Faculty, and consist in a full free ticket for attendance to lectures of the third year for the second year students, and of a half free ticket for the first year student who obtains the highest mark above 75 in all the departments, Mr. S. S. Buckley of second year, and Mr. Laddey of the first year, were the successful candidates.

The valedictory address was delivered by Dr. Bryer Hamilton Pendry, of the graduating class.

Dr. W. J. O'Sullivan, LL.D., K.R.C.V.S., addressed the class afterwards.

The exercises closed with the benediction at the hands of Rev. Dr. David G. Wylie.

After a very pleasant entertainment the newly made veteri-

narians joined their comrades of the Alumni Association, and passed a charming evening and part of the night together, after partaking of a well-served supper, where many had gathered to talk of past college life, of future expectations in professional life, and of many friendly recollections, with great promises of soon meeting again, and of everlasting friendship.

CHICAGO VETERINARY COLLEGE COMMENCEMENT.

On Thursday, March 21, 1895, a banquet was given at the Sherman House by the faculty of the Chicago Veterinary College to the graduating class, which proved a most enjoyable affair. Prof. Jos. Hughes acted as presiding officer on the occasion, and speeches were made showing the good will existing between class and faculty. To the toast "the class of '95," Dr. George A. Lyttle responded. "The Young Veterinarian in Practice" was done ample justice to by Dr. A. E. Flowers. The College Association, was responded to by Drs, J. M. Lambert and A. Mc. Bride. The Faculty, by Prof. A. H. Baker and "Success in Life" by Major W. A. McCluer. Speeches were also made by Profs. Geo. S. Baker, J. F. Ryan, E. L. Guitman and C. D. Sayre. Letters were received from Profs. S. J. I. Harger, W. L. Ruill, E. A. A. Grange, D. A. Salmon, A. Liautard, T. D. Hinebauch, Mayor Hopkins, Health Commissioner Reynolds and John G. Shortall President of the Illinois Humane Society, regretting their inability to attend.

The twelfth annual commencement exercises of Chicago Veterinary College, were held Friday, March 22nd, and forty-two graduates received the diploma of the institution. The exercises were presided over by Prof. Joseph Hughes, who presented the Secretary's report for the past year. He stated that of the forty-two students who had just graduated, eighteen had graduated with honors of which the following is the list. G. F. McGuire, deserves special mention as having the highest general average. Dr. W. A. Savage, received the prizes in anatomy and chemistry, and G. A. Lyttle the prize in theory and prac-

tice. Having concluded his report the degree. "Doctor of Comparative Medicine" (M. D. C.) was conferred by the chairman on the members of the graduating class. Following the conferring of the degree came the distribution of diplomas, and afterward the valedictory by Dr. C. I. Flemming, (copy of which will be sent). On the conclusion of the valedictory address Dr. J. J. McGrath, the class prophet read an effusion, which caused considerable merriment among his fellow graduates. The doctorate address on behalf of the faculty by Dr. A. H. Baker, concluded the proceeding.

The following is a list of the graduates and their locations:—H. G. Bailey, Hinsdale, Ill.; W. C. Baldwin, Roscoe, Ill.; F. C. Binnewies, Walworth, Wis.; R. S. Blackburn, Quincy, Ill.; W. E. Bradley, Lee, Mass.; W. H. Broderick, Chicago, Ill.; W. H. Clarke, Monticello, Wis.; F. A. Crandall Jr., Buffalo, N. Y.; A. E. Flowers, Lyndonville, N. Y.; J. W. Golden Jr., Sleepy Eue, Minn.; F. E. Greene, Lake Geneva, Wis.; A. H. Hartwig, Watertown, Wis.; S. K. Hazlet, Elgin, Ia.; I. W. Horton, Providence, R. I.; G. D. Judson, Polo, Ill.; R. A. Kammerer, St. Louis, Mo.; C. P. Kime, Montpelier, O.; P. O. Koto, Forest City, Ia.; F. S. Lambert, Du Page, Ill.; J. M. Lambert, St. Peter, Minn.; H. Leutholt, Taylor, Pa.; G. A. Lyttle, Palatine, Ill.; A. McBride, Chicago, Ill.; J. J. McGrath, Chicago, Ill.; G. F. McGuire, Waterbury, Conn.; E. N. Nettleton, Chicago, Ill.; A. J. Payne, Wabash, Ind.; J. T. Pfeifer, Franklin, Wis.; E. G. Piper, Palmyra, Wis.; J. R. Sanders, New Sharon, Ia.; H. O. Sandford, Tyn-dall, S. D.; W. A. Savage, Lockport, Ill.; S. Sieker, Herman, Wis.; V. P. Smith, Samestown, O.; H. W. Stern, Beaumont, Tex.; H. E. Talbot, Des Moines, Ia.; C. F. Van Blankens-teyn, Brooklyn, N. Y.; B. H. Wood, Strearor, Ill.

NEW YORK COLLEGE OF VETERINARY SURGEONS.

On March 18, '95 the commencement exercises of the institution were held in the music hall of Madison Square Garden—Prof. Van of Cornell University addressed the class.

The following gentlemen presented themselves on the platform and received their diplomas:—William Anderson, New York; Ernest Buckley, California; Frederick Bovers, New York; George D. Burton, New York; Leopold Danielson, Norway; Clarence O. Durfee, New York; Edward B. Doyle, New York; Albert D. Edwards; New York; William J. Fredericks, New Jersey; August D. Krahmer, New York; John C. Kingsland, Pennsylvania; George A. Knapp, New York, George P. Kern, New York; M. O'Malley Knott, New York; Thomas H. Lynch, Connecticut; Russel Lawton, Canada; Nelson Moffat, New Jersey, Edward A. Manual, Wisconsin; Patrick J. Mahoney, Massachusetts; David C. McCowan, New York; Patrick McInerney, New York; Alfred T. Norman, New York, William H. C. Neff, Pennsylvania; Albert C. Roberts, New York; Rudolph J. Schreiber, New York; John E. Simpson, New York; Frederick L. Stevens, Maine; Joseph Thackeberry, New York; William J. Taylor, New York; Willy E. R. Weyman, New York.

The following prizes were awarded: Faculty Prize—for best general examination, a gold medal—to Willy E. B. Weyman. For best general junior examination, a silver medal—to George H. Harrison. Medal for the best examination on *Materia Medica*—to Edward A. Manual. Practical examination, \$25 before a committee composed of R. S. Huidekoper, M. D., Vet., Thomas Giffen, M. R. C. V. S., and James Turner, D. V. S.—to M. O'M. Knott. Messrs. Kahmer, Manual, Mahoney and Norman were also highly commended.

KANSAS CITY VETERINARY COLLEGE.

This was the fourth annual commencement of this institution—it was held on March 21, '95. The following gentlemen received their degree:—Wm. L. Elliot, Spring Hill, Kansas; Albert B. Wilmoth; Turney, Missouri; Scott W. Peck, Las Animas, Colorado; George M. Neednam, Rockford, Illinois; John E. Topping, Paol, Kansas; Harry V. Goode, Lexington, Missouri; Clarence Atwood, Pecatonica, Illinois; John W.

Stalker, Adrian, Kansas; William T. King, Clinton, Missouri; Henry R. Thompson, Aurora, Kansas; William A. Mark, Elgin, Illinois; Silas L. Brooking, M. D., Eureka, Kansas; James H. Cock, Clinton, Missouri; John O. Young, Rice, Kansas; Benjamin, F. Kaup, Nevada, Missouri.

ONTARIO VETERINARY COLLEGE.

The great event of this institution took place on March 29th, when 150 gentlemen graduated Dr. Duncan read the following list of graduates, honor and prize men :

GRADUATES.—Leslie J. Allen, Blue Mound, Kan.; James H. Armstrong, London, Ont.; C. E. Arnold, Branl, O.; Jas. E. Alyed, Consecon, Ont.; Oscar J. Amey, Ernestown Station, Ont.; Forrest P. Barrett, Peterboro', N. H.; James A. Bean, Wellington, Ont.; Llewellyn W. R. Best, Sandford, Ont.; S. P. Bishop, Greencastle, Pa.; Albert M. Blackwell, Omaha, Neb.; J. F. Blinzley, Norwalk, O.; David R. Bone, Paisley, Ont.; Edward T. Bowers, Cedar Rapids, Neb.; Henry Boyd, London, Ont.; O. E. Brandreth, Strathroy, Ont.; Charles E. Broad, Nomencl, Ill.; Thomas Broom, Blenheim, Ont.; George J. Brossard, Fall River, Wis.; O. Clifton Burnett, Youngstown, O.; Edward D. Burns, Farmington, N. Y.; James H. Burt, Loswithiel, Cornwall, England; Herman Busman, Cooperville, Mich.; Edward F. Bettinger, Chittenango, N. Y.; Ernest C. Burdick, Livonia, N. Y.; Harvey H. Carter, Brookfield, O.; John M. Coates, Kearney, Mo.; Frederick W. Cook, Jamesville, N. Y.; Dillon Coristine, Watford, Ont.; Aaron Cornell, Elkton, Mich.; Frank B. Cocton, Grand Rapids, Mich.; H. S. Creighton, Americus, Kan.; Bradford D. Curtis, North Attleboro', Mass.; Dwight S. Church, Scranton, Pa.; Willard De Bolt, Union City, Ind.; Roy E. Davis, Toledo, O.; James Dent, Milton, Ont.; J. M. Dodge, Caro, Mich.; Joseph A. Douglas, Blake, Ont.; William F. Duffield, Pittsfield, Ill.; W. J. Davis, Decatur, Ill.; Louis H. Eckert, Sebringville, Ont.; John W. Farr, Jarvis, Ont.; W. H. Farrow, Auburn, Ont.; George H. Fitch, Claremont, N. H.; George D. Fortune; Wingham, Ont.; William Fotheringham, Grenfell, N. W. T.; Arthur P. Freeman, Barrie, Ont.; James G. Galloway, Uxbridge, Ont.; Augustine J. Gibbons, Wingham, Ont.; John G. Gibson, Alameda, N. W. T.; S. Wells Gibson, Cleveland, O.; H. M. Gillian, Ackley, Iowa; Francis W. Gokey, Guelph, Ont.; Albert E. Goodwin, Hager City, Wis.; Robt. L. Graham, Schomberg, Ont.; James Grant, Teeswater, Ont.; Lawrence A. Grinnell, Grand Ledge, Mich.; Joseph A. Hackett, Hockley, Ont.; Henry H. Hackler, Pottstown, Pa.; Joseph Hamilton, Auburn, Ont.; William S. Hamiton, Chelsea, Mich.; Edward T. Handy, Onondaga, Mich.; William T. Haney, Forest, Ont.; Bernard Harmon, Decorah, Iowa.; George A. Hay, Campbellford, Ont.; Edwin M. Henry, Oswego, Kan.; Alfred S. Henhoeffter, Strasburg, Ont.; Robert J. Henry, Mono Mills, Ont.; Robert C. Hill, Twin, O.; W. Proctor Hill, Frederick, Md.; John B. Hollenbeck, Rock Valley, Iowa; Maurice A. Hollingsworth, La Salle, Ill.; David Hood, Alliston, Ont.; Roy White, Hooker, Lowell, Mich.; Benj. F. Hoover, Davis, Ill.; William R. Hynes, New York City; Hiram E. Hensel,

Albert W. James, Toronto, Ont.; John V. Jewell, Marcus, Iowa, U. S.; John W. Arcadia, Wis.; Charles E. Inskeep, Port Jefferson, Ohio; George Ireland, Inglewood, Ontario; Johnston, Bath, Ont.; J. M. Clinck, Toronto; William H. Lake, Miami, Man.. Alexander O. Lee, Toronto; John Letham, Stonehouse, Scotland; Don. J. Loofbourrow; Mt. Sterling, Ohio; Robert C. Lipsett, Glenboro', Man; George A. Lipsett, Glenboro', Man; Fred. S. McA. Macdonald, Dundas, P. E. I.; Robert Weber, McKibbin, Buck Valley, Pa; Frank J. McNeal, Shickshinny, Pa.; W. Albert McNeely, Green River, Ont.; Colin McPherson, Glanworth Ont.; John McCay, Duluth Minn.; Donald McKercher, Petrolea, Ont., Fred. De Witt Markham, Port Leyden, N. Y.; Claude L. Megowan, Sacramento, Cal.; Peter J. Mertz, Virginville, Pa.; Richard A. Milne, Don., Ont.; J. J. Moore, Corning, Iowa; George F. Meyers, Danville Ill.; Henry H. Meyers, Youngstown, Ohio, Alfred A. Moody, Guelph, Ont.; William M. Morris, Cass City, Mich.; William Nicholson, Pittsburg, Pa.; Robert R. Nickell, Limehouse, Ont.; W. H. Oatway, Chicago, Ill.; Daniel George Peat, Plainsville, Ont.; Richard M. Phelan, Greenville, Pa.; Walter R. Pick, Columbus Wis.; William T. Pugh, Grafton, N. Dakota; Edward Rafter, Hamburg, N. Y.; G. G. Ratz, Red Bud, Ill.; Charles M. Roche, Cork, Ireland; Peter J. Roetz, Monches, Wis.; Henry C. Riddle, Waterloo, Ont.; J. R. Saxton, Strathroy, Ont.; M. J. Sexton, Minneapolis, Minn.; Arthur L. Shaw, Mt. Upton, N. Y.; Granklin Grifford Sheppard, North Evans, N. Y.; William Morris Stanley, Guelph, Ont.; Henry D. Stebbens, Westmoreland, N. Y.; W. Oscar H. Stener, New Haven, Conn. Archibald D. Stewart, Ailsa Craig, Ont.; James Stewart, Ailsa Craig, Ont.; Teoma. M. Sweeney, Richmond, Va.; M. B. Stiver, Mt. Albert, Ont.; James A. Tancock, London, Ont.; James W. Thompson, Cameron, Mo.; J. Thompson, Ctinton, Iowa; George P. Tucker, Lineoln, Neb.; Horace Bruce Taylor, Nicholasville, Ky.; Caesar Augustus Turley, Brandon Man.. Ernest George Vans Agnew, Fulda, Minn. Robert Vans Agnew, Fulda, Minn.; Frank Vans Agnew Rochester, Minn.; Edward F. Vorhis, Ithaca, N. Y.; Thomas G. Waghorn, Kirkton, Ont.; Duran M. Waldo, Grand Ledge, Mich., Edward K. Ward. Guilford, Ind.; John Welch, Strathroy, Ont.; William W. Welch, Elgin, Ill.; William Lincoln West, Ellsworth, Maine; Allan S. White, Glenallan, Ont.; Joseph Wingerter, Akron, Ohio.; Harvey W. Witmer, Greencastle, Pa.; Clarence D. Wooding, Waterbury, Conn.; Alexander H. Wright, Columbus, Wis.; Frank W. Waterman, Providence, R. I. Macy Weesner, Fort Wayne, Ind.; Fred. A. Wilson, Toronto, Ont.; Amos W. Young, North Liberty, Ohio; David F. Young, Alameda, N. W. T.

SOCIETY MEETINGS.

MONTREAL VETERINARY MEDICAL ASSOCIATION.

The fourth meeting of the session, 1894-'95, of the Montreal Veterinary Medical Association was held in the lecture room of the Faculty of Comparative Medicine on Thursday evening, November 29th, with the President, Dr. Adami, in the chair. Drs. Baker and Dawes were also present.

After the roll-call, reading and adoption of the minutes of the previous meeting the report of the Experiment Committee was received. Mr. Dell then called the attention of the society to the fact that while reports of these meetings were furnished the local newspapers, the reporting committee had, owing to pressure of other work, been unable to furnish the various journals with reports, and suggested that typewritten reports be sent to the veterinary journals.

The president expressed himself in favor of sending reports of original work, experimental or otherwise, to the journals. It would prove a stimulus to the essayists to do more work of this nature. It was decided to leave this to be carried out by the reporting committee.

Mr. C. H. Zink presented the association with the details of an operation for the removal of a tumor from the vagina of an aged cocker spaniel bitch, the latter and also the tumor being exhibited to the members after the paper had been read.

Dr. Adami had microscopically examined the tumor and found it to be of myosarcomatous nature, evidently originating from the muscular tissue of the uterus.

These tumors are frequent in the human subject, and may develop in three ways, viz: Under the serous coat (sub-serous), in the uterine wall (intra-mural), or under the mucous coat (sub-mucous).

The doctor illustrated his remarks in a very instructive manner by blackboard diagrams.

Mr. J. C. Hargrave read a paper on "Canine Distemper," presenting a resume of the history, nature, causes, symptoms complications and treatment of this disease, special reference being made to the work of Mr. Everett Millais, who claims to have discovered the specific germ of the disease and produced immunity by inoculation.

A short discussion followed, Dr. Adami stating that the work of Mr. Millais had not been confirmed by recent observations, and that the germ of distemper still remains undiscovered. He pointed out that Dr. Cecil French working in his laboratory last

year had apparently repeated Millais' observations staining a micro-organism resembling his, which, however, was lost or disappeared during the course of inoculation.

The meeting then adjourned.

The Montreal Veterinary Medical Association met in the lecture room of the Faculty of Comparative Medicine on Thursday evening, December 13, 1894, with the President, Dr. J. G. Adami, in the chair. Professors D. McEachran and Baker were also present. After roll-call the minutes of the last meeting were read and adopted.

A letter was read from Dr. Dinwiddie donating a copy of his work on "Microbiology" to the library. The secretary was instructed to convey the thanks of the association to the donor.

On suggestion of Mr. Thurston, an additional day was appointed by the chair on which members can remove books from the library, but it is the privilege of the members to consult the books at any time during the day.

Messrs. Clark and Boutelle reported on behalf of the experiment committee, the experiments with anæsthetics.

Mr. E. H. Lehnert read notes on a case of "Protrusion of the Rectum in a Dog," describing the method of removal by sutures, which by constriction, produced sloughing of the everted portion. Dr. Adami suggested that blunt scissors, so useful in the removal of hemorrhoids, might also be used to advantage in these cases. Mr. Parker stated that he had used blunt scissors in castrating pigs, with excellent results. At this juncture Dr. Adami was called away, but before expressing his regrets he informed the society that he would exhibit a "Murphy button" at the next meeting and explain the indications and methods for its use.

The honorary president, Dr. D. McEachran, occupied the chair during the remainder of the evening.

Mr. C. A. Boutelle read a paper on the subject of "Enchondroma," giving a brief resume of the work of German and English writers on the subject, and adducing the results of some

original investigations in the pathological laboratory of the University. He described the microscopic appearance of a tumor weighing over ten pounds, found in the abdomen of a spaniel bitch on post-mortem. This was secondary to an enchondroma of the mammary gland removed a year previously.

The cartilaginous matrix of this growth had in some portions been replaced by a mucoid gelatinous material, and in others undergone calcification. Fibrous tissue was also present, and in the peripheral region was a considerable number of fat cells. Such a variety of tissue had in fact been found that the essayist described the growth as being of lipo-myxo-osteo-sarcomatous nature.

In the lungs and in some of the lymphatics were found growths having a tendency to osteoid formations. Another mass found also in the mammary gland, but at the site of the original operation, conformed in appearance to what human pathologists would term either malignant adenoma or carcinoma.

Dr. D. McEachran referred to the paucity of literature on the subject. He had, however, seen similar cases and found in nearly all a tendency to ossification.

After further discussion the chair appointed Messrs. Cowan and Inglis as essayists for the next meeting.

The meeting then adjourned.

VETERINARY MEDICAL ASSOCIATION OF NEW YORK.

The regular meeting of the Veterinary Medical Association of New York County, was held on Tuesday, January 8, 1895, at 8 o'clock with the President, Dr. Huidekoper, in the chair.

On roll-call twenty-five members were found present.

The minutes of the last meeting were read and adopted.

The board of censors having no business to bring before the meeting it proceeded to the reading of papers.

Dr. Neher read a carefully prepared paper upon "Veterinary Education."

In the discussion that followed it seemed to be the opinion of

the members present that the requirements for matriculation were not severe enough, and that they were not adhered to by the different colléges.

A vote of thanks was then extended to the essayist.

Report of Judiciary Committee.—Dr. Giffen, Chairman, reported by reading a letter from the attorneys of the Association, which outlined a new bill to be presented at Albany, and at the same time pointed out several deficiencies in the present law.

A general discussion followed, after which it was moved that the report be accepted, and the committee continued.

Committee on Certificates.—Dr. Becket, Chairman, exhibited a copy of the certificate that had been accepted at a previous meeting, and stated the cost of the same.

Moved and seconded that the motion adopting the certificate be reconsidered, and a new committee appointed to draft a new form. Carried.

Committee on Location.—Dr. Robertson, Chairman, reported that a room could be had at the Academy of Medicine for \$10 per night.

Moved and seconded that the committee be empowered to take the room at the Academy at a cost not to exceed \$10 per night. Carried.

Committee on Charges.—Moved and seconded that the discussion on this report be laid over until the next regular meeting. Carried.

Committee on Revision of Constitution and By-Laws.—Dr. Robertson, Chairman, reported several changes in the Constitution and By-Laws of the association.

Moved and seconded that the secretary notify the members that there has been proposed amendments to the Constitution and By-laws at this meeting, and that they would be acted upon at the next regular meeting. Carried.

The president then appointed the following as a committee on certificates: Drs. Becket (Chairman), Turner and Giffen. Meeting adjourned.

J. E. RYDER, D.V.S., *Sec.*

VIRGINIA STATE VETERINARY MEDICAL ASSOCIATION.

The third regular meeting of the Virginia State Veterinary Medical Association was held in the Old Bank building, Charlottesville, Va., January 3, 1895, at 10 A.M., Dr. W. H. Harbaugh in the chair.

There were present : W. H. Harbaugh, V.S., Richmond; E. P. Niles, D.V.M., Blacksburg; T. A. Donaldson, V.S., Richmond; C. P. Dixon, D.V.S., Charlottesville; Wm. T. Gilchrist, V.S., Norfolk; D. B. Miller, M.R.C.V.S., Charlottesville; H. Marshall, D.V.S., Charlottesville; Geo. C. Faville, D.V.M., Norfolk, besides several members of the medical profession as visitors.

After the reading and approval of the minutes of the last meeting, the following members who had been recommended by the board of censors for election, were balloted for and elected to membership: F. P. Williamson, D.V.S., Raleigh, N. C.; R. D. Garcin, M.D., Richmond, Va.; Chas. McCulloch, Jr., D.V.S., Howardsville, Va.; E. S. Walmer, V.S., Washington, D. C.; John E. Miller, V.S., Richmond, Va.; C. B. Robinson, V.S., Washington, D. C.

Under the head of new business, the following resolution, which was adopted by the United States Veterinary Medical Association at its last meeting, was read :

WHEREAS, We, the United States Veterinary Medical Association, do condemn the operation of docking horse's tails as an operation of fashion, believing that nature intended them as a defense against insects, etc. But so long as it is demanded as an operation of fashion we believe that it should be performed by skilled veterinarians, who are sure to perform it with greater care, less pain and suffering to the animal, and we cannot unqualifiedly condemn those who perform the operation under such conditions.

Dr. Harbaugh discussed this as a decided straddle of the question, the resolution being in one instance a condemnation of the operation and in the other favoring the operator. The question was discussed by most of the members present, when Dr. Gilchrist, of Norfolk, introduced the following :

WHEREAS, The horse's tail is intended by nature as a means of defense against pestiferous insects, etc., the Virginia State Veterinary Medical Association unqualifiedly condemns the practice of docking tails for mere fashion's sake. There are rare instances when it is necessary to amputate a portion of the tail on account of disease or injury as it is often necessary to amputate the leg or arm of a human being, but the indiscriminate habit of docking tails serves no useful purpose whatever and entails needless suffering on the part of the helpless dumb animal, not only from the manner in which it is done, but also during the remainder of the animal's life from various insects; therefore be it

Resolved, That we, the members of the Virginia State Veterinary Medical Association, pronounce the docking shears an instrument of inhuman contrivance, and consider the habit of docking tails a cruel and barbarous practice,

Resolved, That we do not consider the unnecessary docking of tails a surgical operation, and members of this association are justified in refusing to perform it.

After considerable discussion the resolutions were adopted.

The Committee on Legislation and Jurisprudence had no report, but brought the question up for discussion. After considerable discussion it was moved and carried that the committee be increased from three to five, which was done, by adding Drs. Niles and Miller.

Dr. Adamson being absent, his paper on "Hydrophobia" was read by the secretary, and was listened to with much interest. After a most substantial and elegant lunch, at which the association was the guest of the members from Charlottesville, discussion of the above paper was taken up. The discussion brought out the interesting fact that very few of the members had seen many cases of rabies, and several of them none. It was concluded that there are very few cases in this State.

Dr. Niles, of Blacksburg, read some notes on recent experiments with tuberculin. The subject is of such interest that it was discussed at length, all the members taking part.

Drs. Faville and Gilchrist reported some interesting cases of encephalitis, after which Dr. W. H. Harbaugh read a very interesting paper on "Southern Cattle Fever."

After adjournment for supper, the association met in the office of Drs. Marshall and Dixon. Dr. Niles related his experience as veterinary examiner of horses for the Virginia Exposition, which, had it not been so serious from a professional

point of view, would have been truly comical. It was evident that veterinary examinations in this State are not as yet popular.

After a discussion of various questions of interest to the association, it adjourned after one of the most successful meetings in its history.

The annual meeting will be held at the Agricultural College, Blacksburg, Va., June 26, 1895.

GEO. C. FAVILLE, D.V.M., *Sec.*

OHIO STATE VETERINARY MEDICAL ASSOCIATION.

COLUMBUS, O., January 15, 1895.

The Ohio State Veterinary Medical Association convened for its twelfth annual session, in Wells Post (G. A. R.) Hall, in Columbus, O., January 15, 1895, President J. D. Fair, D.V.S., in the chair, who called the meeting to order at 7:45 P.M. Minutes of the previous meeting were read and approved. On roll-call the following members answered to their names: Drs. H. M. Ball, T. B. Cotton, L. W. Carl, W. F. Davis, J. D. Fair, Wm. H. Gribble, T. B. Hillock, W. R. Howe, Neil B. Jones, J. C. Myers, Jr., Walter Shaw, W. E. Wight.

There were present also Prof. H. J. Detmers, Professor Fisher, and Drs. P. Dillahun, J. H. Blattenburg, G. W. Butler, J. V. Newton, and C. Leist.

President Fair stated that the first business was nomination and election of officers for the ensuing year, and asked for names.

Dr. Gribble nominated Dr. J. D. Fair for president; Dr. Howe, Dr. Neil B. Jones for 1st vice-president; Dr. Cotton, Dr. H. M. Ball for 2d vice-president; Dr. Hillock, Dr. W. H. Gribble for secretary; Dr. Wight, Dr. T. B. Hillock for treasurer.

There being but one nominee for each respective office, it was moved, duly supported and carried that the secretary cast the vote of the entire membership for each and every nominee.

This being done, the chair declared the following as the association's choice for officers for the year 1895, to wit:

President, J. D. Fair, D.V.S., Berlin, O.; 1st Vice-president, Neil B. Jones, V.S., Chilicothe, O.; 2d Vice-president, H. M. Ball, D.V.S., Columbus, O.; Secretary, Wm. H. Gribble, D.V.S., Washington C. H., O.; Treasurer, T. B. Hillock, V.S., Columbus, O.

The secretary read the application for membership of J. H. Blattenburg, V.S., Lima, O., graduate of Ontario, class of 1892; vouchers, Drs. W. R. Howe and W. E. Wight. There being no objections, the ballot was dispensed with and the doctor elected a member.

The doctor being present the president called him to the front and introduced him to the members present, whereupon he thanked the association in a few well-chosen remarks.

Dr. G. W. Butler, of Circleville, O., applied for readmission as a member, he having withdrawn (for business reasons) some two years ago. In the past the doctor had been one of our most active workers; so a hearty, unanimous vote soon again admitted him to membership.

The president stated he had prepared no annual address, so this would be dispensed with, and he called upon Dr. W. R. Howe, who responded with an able, instructive and scientific essay on the "Diseases of the Eye," the doctor being especially particular as to the nomenclature. The discussion which followed was a very lengthy one, leading into an argument as to whether the use of cocaine did or did not retard the healing process; and also as to the relative value of the different varieties of the peroxide of hydrogen, and on the use of nitrate of silver as a collyrium.

Prof. Paul Fischer, of the Ohio University, was present and took part in the discussion, after which, by request, he promised to prepare a paper on the so-called disease, "Moon Blindness," and read the same at to-morrow's meeting.

Dr. Gribble had seen a case of congenital lachrymal duct having no inferior opening. Dr. Jones had seen such a case

operated on by making an opening into the nostril, and the tears drained away, but did not know whether the result was permanent or not, as the case was lost sight of.

The discussion having been prolonged it was getting late, so the meeting adjourned, to meet again the following morning (January 16th) at 8 o'clock.

WEDNESDAY, January 16, 1895.

Meeting called to order at 8:15 A. M., President J. D. Fair in the chair, who called upon the Committee on Contagious Diseases for their report.

The committee had no regular prepared report, but the chairman (Dr. Cotton) gave an interesting account of a so-called outbreak of hydrophobia in the city where he resides (Mt. Vernon), detailing the number bitten and sent away for treatment, etc.

Dr. G. W. Butler at this point read reports of a few interesting cases coming under his own observation, which he thought was also this much dreaded disease.

The Committee on Veterinary Education was next called upon, and rendered the following report, to wit:

We, your Committee on Veterinary Education, respectfully submit these few suggestions and recommendations relative to educational requirements and other channels for exalting the veterinary profession.

1st.—That a higher and uniform matriculation examination, embracing all studies of graded schools, should be prescribed by all recognized veterinary schools or colleges.

2d.—That the course of study at all schools graduating veterinary physicians and surgeons should be not less than three sessions of full six months each, with a Faculty embracing no less than ten professors, five of whom should be veterinarians.

3d.—That a final examination be prescribed, exacting no less than seventy-five (75) per cent. average in all studies.

4th.—That the State examining board recognize as qualified practitioners only such graduates as above, and such others as have been in actual practice for a term of not less than ten consecutive years.

5th.—That a committee be appointed to press the claims and respective qualifications of veterinarians to positions on live stock boards, also to recommend their ap-

pointment as meat and dairy inspectors, and to positions as members on State and local boards of health.

All of which is respectfully submitted.

NEIL B. JONES, V.S., *Chairman* :

W. R. HOWE, V.S.,

T. B. HILLCOK, V.S.,

Committee.

It was moved by Dr. Gribble, and seconded by Dr. Wight, that the report of the committee be adopted, and the suggestions, etc., be endorsed as a series of resolutions emanating from this association. Carried.

Dr. W. F. Davis now read a short essay on "The Use of the Thermo-Cautery, with Especial Reference to Paquin's Patent," but calling attention to the different methods employed and instruments used in "Firing."

A very instructive discussion followed this paper, showing again how great minds will differ. Dr. Howe used a storage battery which could not be beat, while Dr. Meyers used electricity conveyed from Edison system, and this was *par excellence* while a number of others had used different methods ; but none equalled the old-fashioned firing iron, heated with charcoal or in a benzine blaze, for good, substantial, beneficial results.

Dr. Paul Fischer, of the Ohio University, now entertained the members with a very scholarly scientific essay on the disease of the eye so-called "Moon Blindness." This essay was worthy of earnest attention, as it was composed largely of the evidence arrived at by continental veterinarians, so that most of us not acquainted with French or German could otherwise receive the benefit ; coupled with the studious attention given the disease by the essayist himself. The discussion which followed was a long one, during which the essayist ably defended the views which he had advocated.

Prof. H. J. Detmers asked of the chair the privilege to explain the new Ohio veterinary law, which the profession said he was the promoter of. The request being granted, he stated that the great difficulties encountered on presenting the original bill to the legislature, the hints for money to aid its passage, the

amendments made, etc., so that the bill as finally passed was the very best law that could possibly have been enacted at the last session of the legislature. It was moved, duly supported and carried that we now discuss the new law. It was first read as a whole, then read section by section, discussed and criticised. each section in its order

At 12:30 P. M. the president called attention to the time of day. It was moved that the chair appoint a committee of three to audit the books of the secretary and treasurer, after which we adjourn until 2:50 P. M. Carried.

The chair appointed Drs. W. E. Wight. G. W. Butler and Neil B. Jones. Meeting now adjourned.

AFTERNOON SESSION.

President J. D. Fair was in the chair, and the meeting was called to order at 2:15 P. M.

Professor Detmers not being present to continue the discussion on the veterinary law, the chair called for the report of the Auditing Committee. It was given as follows:

We, your committee appointed to audit the books of the secretary and treasurer, beg leave to state that we find the same well kept, and a balance in the hands of the treasurer of \$291.04. irrespective of the receipts and expenditures that will come before this session in the report of the secretary.

W. E. WIGHT,
G. W. BUTLER,
NEIL B. JONES,
Committee.

Moved by Dr. Ball, seconded by Dr. Jones, that the report of the committee be accepted. Carried.

It was moved, duly seconded and carried that a vote of thanks be given all who read papers, and that the secretary request Professor Fischer to allow his essay to be published as part of the proceedings of this session. Dr. Gribble said the other essayists must not think themselves slighted because they had not been personally requested to allow their papers published, for if they would read the by-laws they would find that papers read by members, belonged to the association, for publication.

The next in order was the secretary's report:

The secretary would first call your attention to the fact that the expenditures for this session (\$22.35) are considerably larger than common, owing to the fact that at our last annual session you instructed us to purchase a new cash book and ledger, (the same is before you, open for your inspection); and at the last semi-annual session you instructed us to purchase stationery for both the president and secretary. This has been done. In transferring the accounts from the old to the new books, the following facts came to light, *viz.*:

That on July 24, 1883, twenty-five veterinary surgeons met in Columbus, O., and organized the Ohio State Veterinary Medical Association.

From the date of organization, up to and including to-day, there have been received into membership a total of seventy-six (76), of which Ontario Veterinary College furnished fifty-one (51); American Veterinary College, two (2); Montreal Veterinary College, one (1); Royal College of Holland, two (2); Royal College of Vienna, one (1); and non-graduates twelve (12).

With the usual ups and downs of all associations, we now have a membership roll of thirty-four (34), composed of Ontario graduates, twenty-three (23); American college graduates, six (6); Chicago graduates, two (2); Montreal graduate, one (1); Vienna, one (1); non-graduate, one (1).

WM. H. GRIBBLE, *Sec.*

The chair appointed Drs. T. B. Cotton, W. R. Howe and H. M. Ball a committee on veterinary education, and Drs. T. B. Hillock, W. F. Derr and J. C. Meyers, Sr., as a committee on contagious diseases.

Next business was the selection of a place of meeting for semi-annual session. Dr. Neil Jones in a brief speech asked the association to select Chillicothe, which was seconded by Dr. Butler; Dr. Hillock named Cincinnati, and Dr. Wight seconded this latter. No other cities were named, but this number necessitated a ballot, which resulted in Chillicothe receiving seven votes, and Cincinnati six, with other ballots blank. The chair declared Chillicothe to be the place for our next meeting, and instructed the secretary and Dr. Neil Jones to name the date and notify all members.

The secretary read an official invitation from the officials of the Ohio State University inviting us to visit that institution in a body, free conveyance being provided.

Dr. Gribble exhibited (in alcohol) a part of the small intestines of a chicken, which had upon and in it quite a number of

nodules of varying sizes, containing a cheesy pus, with a history of owning seven game pullets. He had procured a game cock-erel, which shortly after getting it appeared sick and dumpish, gradually getting worse but suffering apparently no pain, until it wasted away, a mere skeleton, and all seven of the pullets followed suit. On examination, the members pronounced the trouble to be tuberculosis.

Professor Detmers being now present, the reading and discussion of the veterinary law was continued, and when after several hours the discussion closed most of the members had a better opinion of the law than they had before. as it was an entering wedge upon which all must now unite, and secure, if possible, amendments which will obtain for us a better acknowledgment of the profession in the State of Ohio.

There is now a vacancy in the Board of Veterinary Examiners, and this association suggested the names of Drs. J. D. Fair, W. E. Wight and W. F. Derr to the Governor, from which to select one as a suitable veterinarian to fill the vacancy.

The association now adjourned, to meet in Chillicothe, in semi-annual session at the call of the secretary, the date to be named by Dr. N. B. Jones.

WM. H. GRIBBLE, D.V.S., *Sec.*

MASSACHUSETTS VETERINARY ASSOCIATION.

The regular monthly meeting of the Massachusetts Veterinary Association was held at 19 Boylston Place, on Wednesday, Dec. 26, at 7.30 P. M.

The members present were Drs. Bunker, Burr, Emerson, Labau, Osgood, Parker, Winchester and Winslow, and several visitors.

The names of Drs. Walker and Taunton, a graduate of University of Pennsylvania and A. J. Sheldon, of 50 Village street, a graduate of the American Veterinary College, were received and laid on the table for a month. The name of Dr. Sheldon was reported on favorably by the members of the Executive Com-

mittee present (Dr. Winchester and Labau). Dr. Walker's credentials had not been received.

The matter of appointing a committee on legislation then came up. Dr. Winchester opposed the formation of such a committee as it would be of no practical benefit and would tend to bring the Association more or less into politics. He thought the Association should take no active part in any political movement. We have no axe to grind and no favors to ask and we should keep out of it.

Dr. Parker supported the formation of such a committee. It is not right, he contended, that the Association should be so entirely ignorant of the legislation that is going on. He recalled the incidents of the past year when legislation of the greatest importance to the profession was enacted by the legislature, and yet the Association was entirely ignorant of such proposed legislation. Such a state of things should not be allowed to continue, and he moved that such a committee be appointed by the Association. This motion was seconded by Dr. Becket. Dr. Bunker supported the appointment of the committee; he was distinctly in favor of it, and on being put to the meeting it was carried unanimously.

Nominations were made from the floor, and election by ballot. The committee were appointed after two ballots, with the following result: Dr. Howard, 8 votes; Dr. Bunker, 6 votes and Dr. Osgood, 6 votes.

The Secretary then asked the members for papers, and Dr. Bunker volunteered a paper for next meeting and Dr. Winslow volunteered for February.

The Secretary then suggested that an effort should be made to make the meetings more interesting. He thought it would be a good idea if the chairman were to ask each member present to report verbally and in a conversational way any interesting cases or any matter of interest to the profession. The idea was adopted and the chairman made a beginning by calling on Dr. Winchester to give the Association the benefit of any cases of special interest he had had lately.

Dr. Winchester reported a case of lameness in the stifle joint. The joint was much swollen and nodular to the feel ; it has been more or less enlarged for upward of a year. He opened it and extracted a number of tumors (8) which had the appearance of fibrous tissue ; made a good recovery.

Dr. Labau reported a case of traumatic pleurisy in a mare in foal. She had kicked against a fence and a portion of the fence had broken off and pierced the wall of the chest between the thirteenth and fourteenth ribs, exposing the lung. The external wound healed nicely and she seemed to make a good recovery with little rise in temperature. During the third week, however, the chest began to fill and she finally died in about three weeks after injury. The interesting point in the case was that she lived so long after the lung had been exposed.

He also referred to a case of osteo-sarcoma in a horse treated with pot. iod. and recovery in three months.

Dr. Beckett reported a case of pneumonia in which death resulted from heart disease. A post-mortem examination showed a deposit of lime salts on the auricles. They had completely lost their contractile power. The condition was confined to the auricles. There was slight local pericarditis and little effusion.

Dr. Bunker reported a case of cow supposed to have died from tuberculosis. Post-mortem examination showed pieces of hay wire in the heart. He also reported an autopsy in a cow in which they had found a tumor six or seven inches in diameter attached to the inside of the rumen. Dr. Burr said he thought it was papilloma but he had not yet made a microscopical examination of it.

Dr. Osgood spoke about abscesses in liver being of frequent occurrence. They were not of tuberculous origin. He advocated investigation being made to determine their character,

Dr. Parker reported case of cystitis in a mare. She had been in this condition for some time. She urinated and strained frequently. Digital examination showed the m. m. of the bladder to be thickened and easily removed. He removed a piece three or four inches square. The stench from the membrane was very

bad. The bladder was washed out with boracic acid solution and boracic was given internally. The mare made good recovery. The peculiarity of the case was that a man had been seen to go the mare's stall and raise himself by standing on a bucket, place his arm in the mare's vagina and take "satisfaction" in this way. On one occasion, at least, he introduced his penis into the mare, and the question arose as to whether such an act would cause this condition on the mare.

There being no further business, the meeting adjourned.

JOHN M. PARKER, *Secretary*.

ILLINOIS STATE VETERINARY MEDICAL ASSOCIATION.

A meeting of the Illinois State Veterinary Medical Association held at Peoria, Ill. (National Hotel), February 28th, '95. The meeting was called to order at 11 A. M. by the President, Dr. M. Wilson of Mendota, Ill. On roll call by the secretary the following members responded. Drs. A. G. Alverson, G. Z. Barues, A. Babb, Geo. Ditewig, C. V. Hartman, R. W. Story and M. Wilson. On motion of Dr. Hanawalt, a graduate of the Chicago Veterinary College, Class of 1892, who was vouched for by Dr. A. M. Story was elected to membership by acclamation.

Society then adjourned for dinner. On convening at 2 P. M. the society listened to a paper by Dr. Ditewig entitled "The Strongyli Tetracanthus and Armatus, as a Cause of Death." A lengthy discussion then took place in which most of the members present related their experience with those helminths.

On call of the president Dr. Barnes next read an essay entitled "What of the Future of the Veterinary Profession?"

This paper called forth a general discussion, after which Dr. Babb responded to his name with a production, the "Etiology of Tuberculosis."

At the close of the discussion that followed, Dr. Stringer made a motion, which was seconded by Dr. Ditewig that the president extend the regrets of the society to Dr. J. W. Parkinson in his present illness and express our hopes that he may recover.

On motion the society adjourned to meet in Chicago next November.

ALBERT BABB, B. A., M. D. C., *Secretary*.

VETERINARY MEDICAL ASSOCIATION OF NEW JERSEY.

The annual meeting of the Veterinary Medical Association of New Jersey was held at the State Street House, Trenton, on Thursday, April 11th.

The reports of the secretary and treasurer show the Association to be in a flourishing condition. The officers are:—President, Dr. J. W. Hank, Newark; First Vice-President, Dr. J. Gerth, Newark; Second Vice-President, Dr. R. O. Hasbrouck, Passaic; Secretary, Dr. S. Lockwood, Woodbridge; Treasurer, Dr. B. F. King, Little Silver. Trustees, Drs. W. B. E. Miller, L. P. Hurley, R. O. Hasbrouck, W. Runge and J. C. Dustan.

The number of applications for membership received at this meeting should infuse new life in the older members.

The revision of the Constitution and By-Laws, and other important business consuming so large a part of the day that but one paper was read. A larger number of cases reported than usual. The next meeting will be held in Newark, in October.

KEYSTONE MEDICAL VETERINARY ASSOCIATION.

The monthly meeting of the Keystone Veterinary Medical Association was called to order by President Lintz at the office of Dr. W. H. Hoskins, 3452 Ludlow street, Philadelphia, Tuesday evening, February 12, when the following members answered roll-call. Drs. Bridge, Eves, Hoskins, Lintz, McAnulty, McClellan and Rhoads, with Drs. J. T. Fairley and J. O. George present as visitors.

Dr. Hoskins as chairman of the legislative committee gave a concise history of the movements and present position of the bills, now before the legislature in which all progressive veterinarians should be interested, (vis) to establish a live stock

sanitary commission in the state. Dr. Edges bill being modified and blended with the one known as the veterinarians bill is now as house bill 24.

There is also a bill to establish an office of state veterinarian on the state board of agriculture. And another introduced by Mr. Darvey to prevent the docking of horses.

The application of Dr. L. Pearson for membership was referred to the board of censors.

The assaist being absent cases were next reported.

Dr. Bridge said the supposed cases of cont. pleura pneumonia reported at Chester Heights and Danville were only bronchial troubles. He also reported case of tetanus in cow from acute peritonitis also case in Jersey cow from puncture wound of foot by a nail.

Dr. Hoskins reported recovery from tetanus in three weeks with bromide potassium treatment.

Dr. Eaves thinks if case is brought in when first injured (gunshot wounds of feet) if soaked in creoline solution, tetanus would be prevented.

Dr. Lintz exhibited clamp used in fracture of infra or supra maxillary bone.

W. L. RHOADS. *Sec.*

The March meeting of the Keystone Veterinary Medical Association was called to order by President Lintz at the office of Dr. W. H. Hoskins, 3452 Ludlow street, on the 12th inst. The following members being present:—Drs. Ridge, Eves, Goetue, Hoskins, J. R. Hart, Lintz, Rhoads and McAnulty. Dr. Allen being present as visitor.

Dr. Hoskins as chairman of the legislative committee reported the bill to place a veterinarian officially on the state board of agriculture to now need only the governor's signature to become a law.

The bill to establish a state board of veterinary examiners

is in the same position it was a month ago and now stands little show for consideration this session.

The Veterinary Examining Board of Ohio meets April 2nd and have invited Dr. Hoskins to be present.

After this report the qualifications of the known applicants for state veterinarian under the new law were thoroughly considered and discussed. It was urged that at this time a man should be selected who is particularly well fitted and naturally adapted for this work that the people might learn to repose greater confidence in the profession.

On motion the president appointed Drs. Hoskins, Bridge and Hart as a committee to select from the applicants the one they thought best fitted to honor and advance the profession as State Veterinarian.

The committee after due deliberation selected Dr. Leonard S. Pearson as best qualified and adapted to this work.

The Board of censors were instructed to look for a larger meeting room as the attendance made more room essential. They were also instructed to consider the advisability of reducing the annual dues and see to a revision and reprinting of the by-laws of the association.

The Board of Censors having favorably reported the application of Dr. Leonard S. Pearson, for membership he was now elected to membership by an unanimous vote.

Dr. Goentner reported a very interesting case of pernicious anemia in a running stallion.

As the time was taken up in discussion the reading of papers was postponed.

The meeting adjourned to meet at the home of Dr. Kooker, April 12th.

W. L. RHOADS, *Sec.*

WANTED—A PROTECTIVE LAW FOR VETERINARY PRACTICE.

NEW TREATMENT FOR COLICS IN HORSES.

Tuesday forenoon in the Superior Court the famous red liniment case, wherein Dr. Eben Maxwell is the defendant, came up for trial.

Hon. B. F. Hamilton, of Biddeford, Me., and Fred H. Cobb, of Portland, Me., appeared as his counsel.

Assistant County Attorney Webb opened for the government, and related briefly the facts of the case that will appear further on in the testimony.

James E. Kennard, who has charge of the city stables on Hanover street, testified as to the sickness of the horse, and the calling of Dr. Maxwell. When he arrived the horse was lying in the stall, showing indication of pain in its bowels; Maxwell poured a quantity from a bottle of liniment into the horse's ear, without making any previous examination. The horse shook its head as if in pain. Witness and Street Commissioner Staples used bags of hay to save the horse from injury while thrashing its head.

Frank W. Daicy, driver of the horse, testified to much the same effect.

Street Commissioner Staples testified as to his presence at the stable at about 2 P.M. The horse was lying in the stall and thrashing about very hard; its head would come down on the floor and shake the barn. They protected him with bags of hay. Maxwell was there. The first thing he did in witness's presence was to pour a liquid on the horse's belly. Then he put a powder on the horse's tongue. Witness asked what it was. Maxwell replied that it was a good thing and had saved his life or somebody's life. Then he felt the horse's pulse, etc. Witness said to him that he had humbugged and fooled around there, and told him he'd better go. He'd got enough of him. Then he sent for Dr. Lord.

Cross-examined by Mr. Hamilton: The horse was thrashing about the stall. It was lying on its side. It would roll itself up on its belly and then bring its head down on the floor. This continued for a half hour.

The horse was in intense pain. Witness never saw a horse thrash its head so. He had no doubt that Maxwell was doing as well as he could.

“Didn’t he stop his sweating after the doctor gave him a powder?”

“Yes, he stopped breathing, too.” (Laughter).

“I mean immediately after the doctor’s acts?”

“No, he did not stop sweating then.”

Mr. B. C. Miles, a constable of Portland, Me., called upon Maxwell the 13th day of December, and asked him if he had anything good for the rheumatism. He sold him a bottle of red liniment, and Miles placed him under arrest for pouring the liniment in the horse’s ear. The liniment was produced in court.

The proper treatment for a horse suffering from inflammation of the bowels would be the use of hot baths, hypodermic injection of morphine, the use of stimulants, etc.

There is no passage by which fluid poured into the ear could reach the bowels.

Witness smelled of the bottle of red liniment and said he should say there was chloroform in it. If an ounce of chloroform in a quart of water was administered, it would raise a blister. It is so used to blister the mucous membrane. It is used as an irritant.

Cross-examined: He had practised for five years. He came to Portland, Me., in the fall of 1890. Had practised previously in Salem, Mass. His age was 25 years. Witness described his examination of the horse, which led him to determine the cause of its death. He couldn’t say how much chloroform was in the red liniment. It is an irritant. It is not soothing in its effect if it is an irritant. It is only used to as a counter-irritant. He found a dozen, more or less, blisters in the horse’s ear.

If a horse is troubled with the colic he would not have any

trouble with his head as a result. The witness was decided about that point, though Mr. Hamilton endeavored to get him to state that colic would induce pain in the head.

At this point the defence moved that the court instruct the jury to find a verdict of not guilty on the ground that it was necessary to show that there must have been malice on the part of the respondent, and no malice had been shown by the testimony.

Counsel for the prosecution contended that the statutes did not indicate that cruelty and malice are synonymous terms.

Judge Bonney overruled the point, and called for the defence's witnesses.

Exceptions were taken to the ruling.

AFTERNOON SESSION.

In the afternoon the witnesses for the defence took the stand.

Dr. Maxwell, the defendant, was the first witness. He testified that he was almost 71 years old. He had been a veterinary surgeon for over thirty years. The bottle of red liniment was handed him, and he was asked if he manufactured that liniment.

"I did once, but that isn't my liniment now."

"Why?"

"Because it has been adulterated. If anything touches this liniment, the finger or anything, it is adulterated."

He bathed the horse's head with the red liniment to soothe him, as he had been banging his head on the floor. He only had with him half of an ounce bottle of it. He put most of it on his head, was going to put it in his ear, but found that he hadn't enough to make it worth while. Had he had enough, he should have poured it in the ear to quiet and soothe the ear.

His treatment seemed to quiet the horse. He put a plaster on his bowels to ease the pain.

Witness had been there forty-five minutes before Mr. Staples came.

Staples asked witness what the trouble was. He told him, and Staples said that it was only a case of bellyache, and he wouldn't be needed any longer. When he went away, the horse was quiet, and looked as if he would get well if properly treated. If he died it was because he was allowed to get a chill.

For thirty years he had used the red liniment in his own ears, eyes, mouth, and every part of his system. He had cataracts in his eyes that Dr. Green told him he would have to have taken out, but the red liniment cured the cataract. He used to have sore ears and the red liniment cured them. He put it in his mouth for toothache and sore mouth.

There was nothing in it that would blister. It is an impossibility to blister with it.

"For diphtheria, take twenty drops in water and gargle the throat, and I'll warrant it to cure."

Witness waved a bottle in the air, as if pouring it on top of his head and in his ears and down his neck, and offered to pour it in reality, but receiving no encouragement did not pull the stopper out.

He had put it in a horse's ears when its eyes were white as snowballs, and in less than a minute the eyes were as clear as any eyes.

Cross-examined.

"What is this red liniment made of?"

"Alcohol, chloroform, ether and essential oils. I don't want to tell just what it is made of. I've been offered \$1,000 for the recipe of it."

Witness went on to say that it would cure a headache in less than a minute.

"Does it make any difference as to the cause of the headaches?"

"I've cured a man with the headache in half a minute, that I know had been drunk for five days."

"Do you understand what the word abdomen means?"

"I understand it means something the same as the rectum."

Then he said it meant the stomach, then complained of his

memory, and said: "Give me time enough and I can answer any question you can ask me."

"Do you understand what an anæsthetic is?"

The witness was silent, and evidently did not.

"Do you understand that there is a communication between the ear and the stomach?"

He had found that there was a communication between the ear of a horse and his stomach, and had cured many of them of colic by pouring the liniment into their ears.

He had put liniment in horses' ears for the purpose of making them shake themselves and start the wind in case of colic.

Arthur S. Jordan and Joseph F. Small, of Cape Elizabeth, Me.; Charles L. Robinson, of Portland, Me.; George C. Place, of Cape Elizabeth, Me.; William H. Wentworth, of Scarborough, Me.; Ellis Maxwell, of Portland, Me., and William Ramsdell, of Deering, Me., all testified that they had used the red liniment, and that it did not blister, and that they had seen it put in horse's ears, and that it did not blister, but did cure the colic.

After the closing arguments and the judge's charge, the jury were out but a few moments and brought in a verdict of "not guilty."—*Portland (Me.) Press*.

OBITUARY.

We have received, a short time ago, the news of the death of Dr. George B. Burchsted, of New York City, which took place in St. Luke's Hospital, New York City. Dr. Burchsted was suffering with diabetes since a long time. He graduated at the American Veterinary College, class of 1891. He originally came from Providence, R. I.

AMERICAN VETERINARY REVIEW,

JUNE, 1895.

NOTICE.—Please address all communications regarding matter for publication, books for review, exchanges, etc., to the Editor, 139 and 141 W. 54th St., New York.

EDITORIAL.

TO OUR READERS.—When we reassumed our editorial labors and after heavy pecuniary sacrifices we became again the owner of the REVIEW, we knew some of the various obligations we were contracting—and among these, that of providing the REVIEW to our subscribers in proper time and do away with the numerous complaints which were made some time ago.

But we found our good intentions handicapped by the impossibility that we met to obtain what could be called a correct list of subscribers. We have with difficulty however secured a list—but could we use it—would it be of any advantage—that was an important question.

At all risks we used it and sent our first numbers and this June issue to all those whose names and addresses were given to us. And as the question of the future life of the REVIEW depends now on its readers, we must ask that the notice we have inserted in the April issue be complied with AT ONCE.

Shall we stop our work or shall we continue it—is the problem we must ask of our friends.

Send us your subscription, as we cannot recognize those

given to our predecessors, be careful of giving us your whole names and full address and trust us for the rest of the work. We will do it. Do yours. The life of our Journal is in your hands.

IMPORTANT NOTICE.—*As we go to the binder, on account of numerous letters of inquiries that we have received, we feel that we must make a statement of importance to those who have subscribed with Sabiston, Murray & Co., who have paid for their subscription, or who may have received communications from the receiver appointed by the Court to settle their business. We have not nor will we assume any connections or responsibility in these matters. We can do nothing in relation to these claims, and the work that we are now undertaking must be considered as new and entirely independent of the last 18 years.*

As we have said already—shall we live, or not. It is for the Veterinarians to answer.

UNITED STATES VETERINARY MEDICAL ASSOCIATION.—Since the REVIEW has existed we never have failed to remind our readers of the meetings of this national body. Initiated with it, born with it, informed of all its actions it was not a duty but a pleasure to call the profession to the work in perspective.

For some reasons unknown we have as yet not been officially informed of the coming annual meeting—no doubt when all is well prepared and the programme well known the officers of the association will not ignore the influence that the REVIEW might have in the success of the next gathering and then we will be better able to speak of the work and of the pleasure which is going to occupy the days of the September meeting.

As it is, however, we take advantage of the notice which has appeared in our contemporary the Journal of Comparative Medicine and little as our information may seem we are pleased to announce that the “the Comitia Minora of the association have decided to hold the annual meeting of 1895 in September next, in Des Moines, Iowa.”

We hope later on to keep our readers posted on this important event.

SIXTH INTERNATIONAL CONGRESS OF VETERINARY MEDICINE.—The next Veterinary Congress is to take place this year in Berne, Switzerland, in complying with the vote passed at the preceding meeting—as we have already remarked in our last issue.

The programme laid out for this event is usually large and important. Six questions are to be discussed.

1st. International Veterinary Sanitary police—proposition of an international convention concerning the cattle trade ; publication of an international bulletin of the contagious diseases of domestic animals.

2d. Inoculations for diagnosis or to grant immunities to the point of view of veterinary sanitary police ; results obtained.

3d. Tuberculous meats and public hygiene.

4th. Influence of veterinary science upon social development and increase of public wealth.

5th. Contagious pleuro-pneumonia, results obtained in every country with the means used to stamp it out.

6th. Unification of anatomical nomenclature.

All these questions are of great importance and the selection of the reporters in the various sections shows how the committee has been careful in trying to obtain the most valuable information.

The second question where the subject of malleine, as diagnostic mean of glanders, tuberculine, as that of tuberculosis, pneumo-bacilline for pleuro-pneumonia, the preventive inoculations against symptomatic anthrax, the inoculations against tetanus, and swine diseases, etc. This question itself will draw reports from some of the most scientific men in the profession, and certainly the reading of the papers of the reporters of the fifth question will call from the various parts of the world statements of such value that the presence of pleuro-pneumonia on earth will be readily decided.

These meetings, as they have taken place every few years have always proved a success and besides the good that they have done in a scientific point of view have had for results to bring in closer connection many of the members of the veterinary confraternity. It is evident that the Congress of Berne will not be behind its predecessors. The efforts made by the committee, the hearty support that it has received from the Federal Government, all point out to the fact that a trip to beautiful Switzerland from the 16th to the 21st of September will be one of unusual pleasure and of scientific benefit.

COTENTINE COWS.—We may be accused of repeating ourselves and some of our readers may object to our returning to this subject, yet we feel that on this occasion one word more has to be said by us.

Not by us, truly speaking, but by one who is known to many of us—Dr. Heath, V.S. has been a careful student of Zootechny, he has made himself familiar with breeds of cattle, he has for several years delivered lectures on the subject of hygiene, breeding and care of cattle—and as such his statements must be considered as authoritative.

Let us then allow him to express his opinion on the cotentine cows of which we have spoken so much, but which he knows, which he has seen and studied in their home la Basse-Normandie and upon which he addresses the Breeders and Owners of Jersey Cattle. The following he has sent us and we are pleased to make his statements familiar to our readers, veterinarians and others who must be interested in that branch of our science.

TO BREEDERS AND OWNERS OF JERSEY CATTLE.—For more than thirty years I have been an admirer of the Jersey Cattle. I believe I was the first to commend the Jersey for the cheese dairy ; I glory in the results of the thousand grand tests for milk, butter and cheese ; and I have written against the evils of in and in breeding, injurious pompering, too severe confinement, and overtaxing in forced testing of long periods. In all of these I have warned against the degeneracy of the race. For years I have written and warned against these debilitating and degenerating influences, but the overwhelming booms of the Jersey like the resistless torrents of overflowing mountain streams have swept every thing before them ; and alas ! too sadly, these booms have overwhelmed the Jersey breed of cattle and swept them into the *maelstrom*

of tuberculosis. Now, the only means of rescue from this imminent peril to the breed is to destroy the diseased root and branch, and to breed back the healthy to their stalwart progenitors, the Cotentine blood of the Normandy, the noblest, longest, most vigorous and best milk and meat animals of the world. But what shall we do with our long-cherished pedigrees? ask the Jersey breeders. Save the good with the healthy cattle, and destroy the worthless with the tuberculous stock! All through Europe the blood of the magnificent Cotentine of Normandy can be traced to whenever doing and beef excellence in the herds are found. It is like the blood of the grand old Block Flemish Draft Horse, it permeates every breed of Draft Horses. None are superior without this Flemish blood. The Jersey, in her island home, though in-bred for a hundred years, and though refined and dwarfed, yet, with her Norman blood, her similar surroundings and treatment, she retains the butter and beef qualities in a surpassing degree even under much adversity. This is also true of her cousin and neighbor the Guernsey. The Jersey, in the United States and Canada, and doubtless in England, will not probably average above seven hundred pounds weight; while the noble Cotentine will average about double that weight. The Jersey maintains her appetite and digestive powers descended from the Norman, and her consumption of food is now relatively much greater than her progenitor. Weight for weight, the Norman cow consumes far less food than the Jersey, and yields relatively a larger amount of products. It is doubtless true, that with the same amount of food, cow for cow, the Cotentine will give a product of milk and meat, of greater weight and value than any cow in the world.

I know this is a new and startling letter to Breeders and Owners of Jersey Cattle. But my convictions have been verified by my investigations and studies of the breeds of Jerseys and Cotentines, in their herds, pastures and homes. Further, I trust that my method of breeding out the tendency even, to tuberculosis in the Jersey and Guernsey breeds, will give relief and hope to the Breeders of these strains of valuable bovine blood, as the vigor, stamina and strength of the Norman blood has ever resisted the infection of tuberculosis. Separate your healthy, large and robust from the small and weak, and breed them up and back to their source of health and excellence. In so doing you will not lose the beautiful heads and large lustrous eyes, nor the shades of cherished colors, but you will secure size and stamina and health, for all of these are inherent in the substantial Normandy, so long cherished in the Cotentine blood. The Cotentine though large, yet relatively the per cent. of bone is less than that of the Jersey, Guernsey or other short horn. I have never eaten better beef or veal than that of the Jersey or Norman. The Jersey milk and butter are good when fresh, but the keeping quality of the Cotentine products are far better. The waxy texture and aroma of the Normandy butter is superlative, and its keeping quality superior to any butter with which I am acquainted. I have seen it in large piles unsalted for two or three days, then salted and put up, having maintained fine texture and full aroma for weeks. The bulls of the Normandy breed are gentle and safe, and the cows are kind and submissive.

What I have written has in nowise been inspired by self-interest, as I have not, and do not expect ever to have one dollar invested in Cotentine breed of cattle of Normandy; nor have I any French interests.

A. S. HEATH, M.D., V.S.

ORIGINAL ARTICLES.

CROUPOUS PNEUMONIA IN THE HORSE.

BY ARTHUR SALINGER, V.M.D., Demonstrator of Surgery, Veterinary Department,
University of Pennsylvania.

Read before the Pennsylvania State Veterinary Medical Association.

The consideration of croupous pneumonia is by no means new, a discussion of some of the more important symptoms and newer remedial agents in the face of recent investigations is however in place :

It is the object of this paper to call attention to the pathology, diagnosis and treatment of acute lobar pneumonia.

The synonyms for this disease are Lobar, Croupous, or Fibrinous pneumonia, pneumonitis and Lung fever.

Pneumonia is one of the most widespread of all acute infectious diseases. There is scarcely an acute infectious disease so frequent in the horse as pneumonia. Climate does not seem to have much influence in the production of this disease, it prevails equally in cold and in hot countries. Cold has been thought to be one of the most important etiological factors and it is undoubtedly true that the disease sometimes follows a sudden chilling or wetting, but in many cases it will be impossible to obtain any such history. Pneumonia frequently follows traumas of the chest, when it is known as contusion pneumonia.

A change of opinion has recently taken place since the developement of bacteriology in regard to the etiology of croupous pneumonia. It is now unquestionably considered an infectious disease depending upon a specific micro-organism: What has furthermore given strength to the opinion among the medical fraternity is the fact that many epidemics of pneumonia have been described.

The diplococcus pneumonia of Fraenkel is the most constant organism found in croupous pneumonia, and it is now believed

by the most competent authorities to be the specific agent of this disease. It is identical with the micrococcus which Pasteur and Sternberg found in the saliva of certain individuals and which produces Septicaemia in the rabbit. The researches of Friedlaender, Weickselbaum and others show that it is by far the most constant organism in pneumonia. According to the dominant view pneumonia is an infectious disease caused by this diplococcus which has its main seat and produces its chief effect on the lung, and can under favorable circumstances invade the pleura, meninges and endocardium. It is a widespread organism, at times present in the buccal secretions of healthy animals, in the secretion of the nose and mouth it may be demonstrated by treating the ordinary cover glass preparation with glacial acetic acid, and then washing off the acid, dropping on aniline oil and gentian violet, which is to be poured off and renewed two or three times. The organism is seen to be somewhat elliptical, lance-shaped coccus occurring in pairs, hence the term diplococcus. It is usually encapsulated. Inoculation experiments upon dogs, guinea pigs and mice have proven successful. The germ producing the well-known pathological changes occurring in croupous pneumonia.

Morbid Anatomy: Since the time of Lannaec, pathologists have divided the stages of pneumonia into three well-known divisions of engorgement, red hepatization and grey hepatization.

The stage of engorgement usually lasts but a short time, from twelve to thirty-six hours. The lung tissue is deep-red in color, more solid and on section the surface is bathed in blood and serum. Crepitation is still present although not so marked as in normal lung.

In the stage of red hepatization the lung tissue is firm, solid and airless. On section the surface is dry, reddish-brown in color and the deeply congested appearance of the first stage is absent. In this stage the lung is very friable and is readily broken by the finger. Careful inspection shows the surface to be distinctly granular and the air cells filled with fibrinous

plugs. The smaller bronchi often contain fibrinous plugs. This stage usually lasts about two days.

Stage of grey hepatization is the first stage in the process of resolution. The exudate is softened, the cell elements are disintegrated and are rendered capable of absorption. The grayish appearance is due to the absorption of the haemoglobin and red blood corpuscles, with an increase in the number of white corpuscles. A point to which especial attention should be called is the almost frequent association of affection of the pleura. It can be stated that in every case of pneumonia where the inflammatory process reaches the periphery, the pleura is affected.

The pleurisy may be either a dry one pleuritis sicca or a pleurisy with effusion may be present. We will have occasion again to refer to pleurisy with effusion in considering the symptomatology and prognosis of croupous pneumonia. It will be noticed that the right lung is more frequently affected than the left one.

Symptoms. This disease usually begins with a marked and prolonged chill with rapidly rising temperature, frequently going from 103 to 106 degrees with rapid pulse, marked depression, hebetude and anorexia. The extremities will be found to be cold. The pulse may be from 60 to 100 in a minute. In severe cases the conjunctiva may be seen to be jaundiced due to profound blood alterations. Symptoms referable to the lungs manifest themselves at once. Respiratory movements are quickened and painful, due in the majority of cases to early involvement of the pleura. The type of breathing is costal. The affected animal does not lie down or if found in the recumbent position, the animal will lie on the affected side. The standing position of the horse is typical. The front legs are usually held far apart and the head is extended and carried low. The animal moves as quietly as possible, cautiously preventing unnecessary movements. Cough if present is slight, short and evidently painful. The most important diagnostic points are brought out by physical examination.

Percussion early in the first stage may give you a tympanitic note. This can only be observed if the case is seen early. This tympanitic note soon gives way to dullness on percussion which shows the beginning of the stage of red hepatization or consolidation. In the third stage the percussion note tends toward clearing up and in favorable cases returns to normal pulmonary resonance. If the pleura be affected slight percussion over the affected area produces sharp pain.

On auscultation in the first stage we hear an increase of the respiratory murmur, accompanied by crepitant rales. This rale is heard only at the end of inspiration. As consolidation goes on the crepitant rale disappears giving place to bronchial breathing. In the stage of resolution, moist rales return which are coarser than the rales first heard and are known as the crepitus redux.

If pleurisy with effusion takes place at any stage of the disease the respiratory symptoms will become aggravated. The dyspnoea already present will be changed to orthopnea. Symptoms of cyanosis will begin to show themselves. It is obvious that if you have fluid at the base of a lung that is already affected by an inflammation of high grade the difficulty in breathing will become more marked. Hence the recognition of a pleurisy with effusion (no matter how slight the effusion) should be noticed at once.

The urine has the characteristics of ordinary febrile urine, high specific gravity and usually alkaline in reaction. Albumen may be present and the chlorides will be found to be markedly diminished.

The fever is typical remaining high from the onset with very slight morning remissions. It remains so for five or six days and in favorable cases declines, recovery usually taking place in from ten to fourteen days. The termination is usually abrupt resembling crisis. The cough becomes looser, the respirations less rapid, the pulse slower and fuller. The animal regains its appetite and shows all the symptoms of returning health.

In rare cases the disease may be arrested in the stage of red

hepatization, in these abortive cases the disease may last only two to three days.

In fatal cases, especially in cases of the typhoid variety, symptoms of general blood dissolution manifest themselves. Oedema of the lungs sets in and death due to heart failure comes on.

The *prognosis* of croupous pneumonia is favorable in a large majority of cases, unfavorable cases are those presenting the typhoid state and those in which complications develop, especially pleurisy with effusion.

The termination be either in complete resolution, delayed resolution, in chronic interstitial pneumonia, (which occurs either in very young or very old animals, those debilitated by some previously existing disease as bronchitis) by abscess and by gangrene of the lungs, the latter terminations are rare.

Diagnosis.—Croupous pneumonia can be readily diagnosed from catarrhal pneumonia by its clinical course. The sudden onset, the high fever, the physical signs, the termination are all essentially different. The course of catarrhal pneumonia is typical, you have a history of a preceding bronchitis or a toxic agent inhaled, or food articles getting into the air passages, (deglutition or inhalation pneumonia). The fact that catarrhal pneumonia is a double sided disease and the spots of dullness on percussion will be found to be small, difficult to make out and affect only a lobule of the lung. The rales do not disappear in catarrhal pneumonia but remain throughout the disease, nor is the breathing distinctly bronchial. In catarrhal pneumonia we have subcrepitant rales heard both on, in and expiration, whereas in croupous pneumonia we hear a moist rale which is heard only at the end of inspiration.

The diagnosis from pleurisy can frequently not be made as I have already indicated that both fibrinous and pleurisy with effusion are concomitant with this disease. In typical cases the history of the disease, the onset, the fever, the cough and the physical signs will enable one to come to a correct conclusion. In questionable cases the bacteriological examination of

the secretions from the nose and mouth will show the presence of the diplococcus of Fraenkel.

There is no specific treatment for pneumonia, recent experiments by the brothers Klemperer of Berlin, on the production of immunity and for the cure of pneumonia with subcutaneous and intra venous injections of large quantities of filtered bouillon cultures or the glycerine extract of the germ, has produced some remarkable results. Immunity was produced in animals lasting for six months which was transmitted to the offspring born within this period. Still more interesting are the observations upon the cure of the experimentally produced disease. They found that the serum and fluids of the body of an animal which had been rendered immune, had the property not only of producing immunity when introduced into the circulation of another susceptible animal, but actually of curing the disease after infection had been in progress for some time. In infected animals with a body temperature of from 40 to 41 degrees C., the fever fell to normal in twenty-four hours after the injection, of serum of another animal which possessed immunity. They believe that the pneumococcus produces a poisonous albumen, (pneumotoxin) which when introduced into the circulation of an animal causes elevation of temperature and the subsequent production in the body of a substance (antipneumotoxin) which possesses the power of neutralizing the poisonous albumen which is formed by the bacteria.

In man they hold that during the pneumonia process there is a constant absorption into the circulation of this poisonous albumen produced by the bacteria in the lungs. This continues until eventually the same antidotal substance is produced in the circulation that has been seen to occur experimentally. It is then that the crisis occurs. The bacteria is neither destroyed nor is their power to produce the poisonous albumin lessened, but the third factor, the antitoxic element, now exists and neutralizes the toxic substances as they are produced. They demonstrate that the serum of the blood of patients after the crisis of pneumonia contained the antitoxic substance and was

capable, in a fair number of cases, of curing the disease when injected into the infected animals.

While these experiments are still immature, it is nevertheless a decided advance in therapeutics and seem to approach as near as possible to a specific plan of treatment. Further experiments in this line will be awaited with interest by the entire profession.

Knowing then from our present knowledge of Therapeutics what are the main indications for treatment in this disease: First the hygienic surroundings and food of the patient should be carefully looked after. The animal should have an unlimited supply of fresh cold water from the start. A diet consisting principally of bran mashes, scalded oats, (grass, when in season, is preferable if the animal retains an appetite) but if no desire is evinced for food of this particular description, then the animal must be allowed to eat anything that will be taken spontaneously. Corn on the cob is often eaten when everything else is refused. If the horse absolutely refuses to eat it has been found to be good practice to feed him with oat meal preferably (Bethlehem oat meal) and eggs three or four times daily, made into bolus's and given in this manner. The comfort and surroundings of the patient must be attended to. Pure air is essential. Avoid placing the animal in a stall where he may be exposed to draughts of cold air and sudden changes of temperature. It is considered better practice to blanket the animal than to cut off the fresh air and prevent thorough ventilation.

Locally of mustard, turpentine, etc., have been found useful. In regard to blood letting it may be briefly stated that as a systematic course, in croupous pneumonia it should not be resorted to. In young, strong animals, of good stock, if the case be seen early and *only* early local blood letting has some decided advantages, but in older, more feeble animals and those affected by some chronic ailments (bronchitis, emphyzematic,) it should never be practiced. A symptom that often requires special treatment is high fever. This may be treated either locally or constitutionally. Of the local measures, systematic

applications of cold water to the chest will be found useful. Another plan is to give large enemata of cold water by the bowel. This will promptly reduce temperature without depressing the heart, and should be used every couple of hours until the temperature is lowered. Experience advises against the use of analgesic, antipyretics, such as antipyrin, antifebrin, phenacetin, etc., on account of the too depressant effect upon the heart. To add the depressing effect of a powerful drug to the pathological influences already depressing the heart, is now recognized as increasing the danger of cardiac failure which is the most frequent cause of death in croupous pneumonia, while it is true that these drugs unquestionably reduce temperature, they do it at a great risk, and while we have other means of lowering temperature (cold water applications and enteroclysis of cold water) they should not be employed. If any of these drugs be given, phenacetine should be chosen as it has the least depressant effect upon the heart. In reference to the employment of *veratrum viride* and *aconite* in the first stage and *digitalis* at a latter period appears as unreasonable. Cardiac depressants in croupous pneumonia are always of doubtful utility and *digitalis* as a cardiac stimulant should be given only in response to special indications. Many of the symptoms of pneumonia are due to a toxaemia, and it is far better to bleed the patient if he is to be bled at all, into a basin than into his own vessels. Later in pneumonia when the heart becomes weak, *digitalis* and alcohol are of decided value. Stimulating expectorants during the third stage have some use, the one having the widest reputation and being by far the one most used is the Carbonnate of ammonia. If employed the dose should be frequently repeated as the effect of this drug is soon lost. A powerful respiratory stimulant, when such becomes necessary, is *strychnia*. This should be administered hypodermically and in full doses. If the cough becomes distressing and painful resource should be had to opium in some form, preferably as Dover's powders. A favorite plan of treatment in human practice consists in giving full doses of quinine early in the disease, followed by a laxative

dose of calomel. Reduction of temperature if it becomes necessary, carbonate of ammonia as a cardiac and respiratory stimulant, control of the fever by means that have already been indicated, digitalis and alcohol if the heart show signs of flagging and the treatment of complications as they may arise.

The disease being the same whether it affects man or animal it seems to me the same treatment might well be practiced in Veterinary medicine.

It must not be forgotten that many cases of pneumonia will recover without treatment (and also in spite of some treatment) and the less we complicate our case by giving unnecessary drugs the clearer will be the course and the symptoms of the disease.

EXPERIMENTS WITH TUBERCULIN ON NONTUBERCULOUS COWS.

By PROF. JAMES LAW, M.R.C.V.S., Cornell University, Ithaca, N. Y.

On October 28th, 1894, the following cows were set apart for this experiment: two Holstein cows, and one Jersey in full flow of milk, being about six weeks after calving, and two dry, farrow cows of common stock, one pointing to a Shorthorn ancestry, and the other to a Devon one. Meanwhile observations on the milk of three other cows, two Holstein's and a Jersey, about the same length of time after calving, afforded a fair comparison between cows treated with tuberculin and others under similar condition, but without such treatment.

The first five cows to be tested with tuberculin, each received in proportion to its size, a full dose of tuberculin weekly, and the temperatures were taken before the injection for the normal standard, and about every two hours from about the ninth to about the twentieth hour after each tuberculin injection.

TEMPERATURES.

The tested animals were treated like the rest of the herd with the single exception, that in order to take the temperatures, they were tied up in the stalls for twenty-four hours on each occasion of testing, while the others were at liberty under an enclosed shed except when tied up for feeding and milking.

The prolonged standing on hard boards, led on each occasion to congestion of the feet of the Holstein cow Mabel which weighed 1455 lbs, but as this invariably took place under similar circumstances, and apart from the injection of the tuberculin, the slight rise of temperature on each occasion of testing is abundantly accounted for from the condition of the feet alone. This conclusion is further confirmed by the fact that in excepting in cases in which she was turned out in the afternoon to relieve her tender feet, the temperature went on steadily increasing to the last, This was victoriously the case in her last tests of the series (November 28th, December, 7th, December 12th). On a previous occasion Mabel had been tested in company with the entire herd, and stood the test satisfactorily. Even in the present series of tests, this cow (with one exception) never rose more than two degrees above her initial temperature taken when that particular test was started, and even she only rose nine-tenths of a degree above 102° F, which may be set down as the normal standard temperature of a cow in full milk, highly fed and kept indoors. Taking into account the variations in healthy cattle from one time of the day to another, this rise of less than one degree above the general standard implies nothing.

The exceptional case was on November 9th and 10th, when Mabel's temperature rose to 104° , and that of the Shorthorn grade to 104.3° . Taken by itself this test might have been misleading, but in connection with six other tests (in case of Mabel seven), made both before and after this, with the same dose of tuberculin, and with no such resulting rise, it can safely be set down to accidental conditions. The real cause was not clearly made out but it is probable that it was chargeable to exposure in a cold draught. Both cows stood on separate ranges close

to the east door of the barn, through which the manure had to be forked out, with a cold east wind entering by that door, and blowing on cattle that had been shut up in a warm building over night, a slight chill was to be expected.

The Jersey Daisy never rose above the normal standard of 102° , excepting in the first test, and then only 102.3° —too little to furnish even a suggestion of tuberculosis, and no higher than we find in many well-fed, healthy cattle.

The Holstein *Belva*, on two occasions rose to 102.5° , half a degree above the normal standard, but which is often attained in health, and apart from the tuberculin test. Moreover on five other tests both before and after these she did not show a rise over 102° so that the less suspicion should arise from this insignificant elevation.

The *Devon grade cow* in different tests had her temperature elevated to 102° , and on one occasion to 102.6° a little more than half a degree above the normal, and which as already said is often found in the healthiest cows.

The *Shorthorn grade* had a fever temperature on one occasion apparently from a chill as already referred to. In her first test it rose to 102.6° as did also the Devon grade on the same occasion. This may be explained partly by the fact that both had been driven a distance of seven miles the day previous, causing much excitement, and followed by the excitement induced by coming into a new place, and bred among new people.

One other point should be named as affecting the temperature of all the test animals in the early forenoon and late afternoon. The whole herd was put in the barn for feeding and milking, from five to seven in the morning, and from three to six in the afternoon, so that at these hours the place was crowded and the disturbance greater. Elevations of temperature of a degree, and under occurring at such times, and as repeatedly seen in the tested animals are thus accounted for. Such elevations do not show the persistence, and the slow gradations of rise and fall which we usually see in the rise caused by the tuberculin.

Taken all in all then there is nothing in the indications of temperature that would indicate, either at the time of the test, or later, that the tuberculin had proved in any way inimical to the general health. Had the health been impaired by the repeated operation of the tuberculin it might have been expected that the constitutional disturbance would have been more distinctly marked in the later tests than in the earlier ones, and as no such tendency is observable it may be safely concluded that so far as illness can be indicated by a variation of temperature tests doses of tuberculin, in the absence of the bacillus, does not seem to produce any such illness in the healthy animal.

It has been alleged that the repeated use of tuberculin on animals slightly tuberculous, abolishes the tendency to reaction under the use of this agent. If this were true it would argue rather a curative than a malific action of the tuberculin, but in other experiments, I have found the second test made a week or more after the first to produce a no less marked reaction so that this alleged tolerance need not be taken into account in the cases before us.

RESPIRATION AND PULSE.

As regards the record of the pulse and breathing given in the tables it is sufficient to say that they furnish no real indication of a deviation from the most perfect health. In cattle pulse and breathing vary so widely under different conditions of the environment, digestive organs, exercise etc., that it would take very much greater variations than those given in the tables to give true indications of disease.

MILK RECORD.

The milk record may be accepted as a more sensitive test of constitutional injury than temperature, breathing or pulse. It is also farther reaching than these other indications, as it involves a healthy exercise of all the bodily functions, and above all those of appetite, digestion, assimilation and secretion. An appreciable disturbance of the health at any one point will usually be manifested in this delicate balance, in a variation of quantity or quality of the milk.

Belva. Taking the milk record of Belva as given in table VI ; we find that the milk yield in the twenty-four hours following the injection of the tuberculin shows no constant nor striking difference from that of intervening days. The highest yield per day (42.25 lbs) was on the fifth day succeeding the third injection of tuberculin, and on each of these five days the yield was from two to five pounds above the average. The lowest yield per day (31.5 lbs) was on the fourth day after the first injection, while the preceeding days yield had been over a pound above the average, and the two days following the injection had been respectively two and three pounds below.

What is more significant is that the average yield of milk for the days following the seven injections of tuberculin is practically the same as the average yield for the whole forty-seven days included in the experiment. This may be stated clearly in tabular form thus:

Average of the seven days following the injections of tuberculin 37.257 lbs. Average of the forty-seven days for which the milk record is given 37.247 lbs. The difference is 0.01 lb, and is in favor of the days when the system was charged with the dose of tuberculin.

Daisy. The milk record of Daisy given in table VII, shows a great difference in the yield on different days, but no constant relation between the low daily yield and the days when the tuberculin was in the system. On the first, second, and fourth occasions in which the system was charged with the tuberculin the milk yield was above the average, whereas on the third, fifth, sixth and seventh occasions it was below. The highest daily yield (22.25 lbs) was on the day in the evening of which the first injection of tuberculin was made, and the second highest (21.25 lbs), only $\frac{3}{4}$ of a pound less was on the day after that injection. The lowest daily yield (15 lbs) was on the day when the last injection of tuberculin was in the system, and when besides the cow was in *heat*. This low yield was also reached on the day preceeding the second last tuberculin injection (the ninth day after an injection), and also on the succeeding day when the

system was charged with this second last injection. This low record could not be justly charged on the tuberculin injection seeing that it was already reached the day before that injection.

Daisy like the rest of the herd was falling off in milk during the experiment, and her average when charged with tuberculin suffers on account of her having reached her lowest mark on December 7th, on the evening on which a dose of tuberculin was given, and further, that on December 13th, the day of the last test her milk shrunk because she was in heat. Taking the seven tests the arrays stand thus: Average of the seven days following the injections of tuberculin 17.82 lbs. Average of the forty-seven days for which the milk record is given 18.26 lbs. This shows a difference of less than half a pound daily on the average against the tuberculin. If we leave out the last injection (December 13th) when the cow was in heat, we find that the average yield per diem for the next six days during which the cow was charged with tuberculin is slightly above the average for the whole forty-seven days of the trial.

Molly, Freda and Bertha. These cows were not injected with tuberculin, and their milk records have been introduced to show that the daily oscillations in the yield, and its progressive diminution in the main during the forty-seven days, was common to the whole herd, and in no sense peculiar to the three cows that had been treated with tuberculin. The gradual failure can be seen in the tables. It may be more clearly shown by placing side by side the general average for the first four weeks, and the average for the last two weeks and five days.

Average for first twenty-eight days,

BELVA	MOLLY	FREDA	DAISY	BERTHA.
lbs.	lbs.	lbs.	lbs.	lbs.
38.10	41.31	43.51	19.23	28.46

Average for the last nineteen days,

lbs.	lbs.	lbs.	lbs.	lbs.
36.00	42.87	40.51	16.76	26.13
2.10	1.56	3.00	2.47	2.33

Molly has gone on improving, but the others show a very decided falling off which is greater in the noninjected Freda than in the injected Daisy, and greater in the uninjected Bertha than in the injected Belva.

Oscillations. The variations above and below the general average for each animal injected and not injected with tuberculin would be very clearly seen by glancing at the tables giving the graphic illustration for two Holstein's and two Jersey's, and which in figures may be shown as follows :

		lbs.		lbs.	lbs.
BELVA,	General average per day	37.247	Highest per day	42.25	Lowest 31.50
FREDA,	" " "	41.78.	" "	57.50	" 34.50
DAISY,	" " "	18.26.	" "	22.25	" 15.
BERTHA,	" " "	27.01.	" "	23.5.	" 23.
MOLLY,	" " "	41.19.	" "	48.	" 33.5.

The extreme it will be observed were actually greater for the cows that were not treated with tuberculin than for those so treated. Among the Holstein's, *Belva* had a variation amounting to 10.75 lbs., *Freda* one of 13 lbs., and *Molly* one of 14.5 lbs. Among the Jersey's, *Daisy* had a variation of 7.25 lbs, and *Bertha* one of 10.5 lbs. Extreme variations in the yield of milk then cannot be charged on the action of a test dose of tuberculin injected into a healthy animal, nor of a series of such test doses administered at intervals of a week.

PERCENTAGE OF BUTTER-FAT IN THE MILK.

Before dismissing the milk it is desirable to consider how the ratio of butter-fat is affected by repeated test doses of tuberculin injected into a healthy animal. A study of the tables given below will fail to establish any connection between the presence of a test dose of the tuberculin in the animal body, and any increase or diminution of the fat in the milk. The Holstein *Belva* had the highest percentage of butter-fat (3.6) October 20th, ten days before the first injection of tuberculin. Her next highest record (3.4) was December 8th, while under the action of tuberculin. Her lowest record (2.8) was December 1st. two days after the operation of a dose of tuberculin. Her variation (0.8)

is only a little more than that of the untreated cow Freda (0.6), and only about half that of Molly (1.5); the Jersey *Daisy* also made her highest per centage (5.6) October 20th, and her lowest (4.9) December 8th, when under the action of tuberculin. But she made her second highest (5.55) November 10th, when under tuberculin, and an equal record November 17th, two days after the operation of a dose of tuberculin. Her greatest variation was 0.7%, while that of the untreated cow Bertha was 1.15%.

There is therefore no change in the percentage of butter-fat sufficient to indicate any disease or ill-health as the result of the administration of repeated test doses of tuberculin.

EFFECT ON BODY WEIGHT.

The weight of the animals varied so little during the experiment that it might be said to have remained stationary. The record is as follows :

	Oct. 30th,	Dec. 1st,	Dec. 13th, 1894,	Jan. 5th, 1894.
BELVA,	1264 lbs.	1300 lbs.		1404 lbs.
MABEL,	1455 "	1540 "		1405 "
DAISY,	945 "	950 "		965 "
GRADE SHORTHORN,		1020 "	1020 lbs.	1026 "
GRADE DEVON,		895 "	915 "	910 "

Considering that a variation of 50 lbs. in the weight of a cow may occur in a few hours according as it is taken before or after feeding and watering or milking, there may be said to have been no change excepting in the case of the two Holstein's, in which there is shown a gain of 141 lbs. and 115 respectively. It is worthy of notice that the last weighing, which makes the highest record was made three to four hours after the morning feeding, and (in the case of the three first cows) of the morning milking. The two dry cows had been watered but had not been fed on the morning of the last weighing as they were just about to be killed.

It may be concluded that the repeated test doses of tuberculin had in no injurious way affected assimilation, and that in

the two Holstein cows, it had not prevented a perceptible improvement in this respect.

POST MORTEM EXAMINATIONS.

To complete the record the two farrow cows were killed December 5th, 1894, and subjected to careful necropsy. In the main the viscera were sound. The shorthorn grade had pus in each of the left quarters of the mammary gland in the milk sinus, the walls of which were red and thickened.

When strained and placed under a microscope the pus showed numerous cocci but no bacilli.

As is usual in old cows, the groups of lymphatic glands in the intermaxillary and pharyngeal regions, on the chest, the abdomen, the subcutaneous and intermuscular regions were pigmented of a dark grayish color, varying at different points but in no case showing molecular degeneration, coagulation necrosis (caseation) nor even perceptible congestion. In the shorthorn grade the lymphatic glands behind the diseased mammae was considerably enlarged.

EXPERIMENTS AT THE UNITED STATES BUREAU OF ANIMAL INDUSTRY.

In the investigations concerning bovine tuberculosis, 1894, Dr. Schweinitz records the effect on the milk of the two healthy cows, one of which received one dose, and the other three successive doses of tuberculin. The dose in each occasion was 2 c. c., for each cow, and as they were common stock it may be inferred that it was a full dose considering the probable weight of the animals. Of variations in temperature it is enough to say that there was no more than would occur in the best of health. The analysis of the milk is given in table X from which it will be seen that in the single test of cow No. 113, there was a slight reduction of the total solids, and of the different constituents such as sugar, albuminoids and fat. The second cow No. 217 tested three times under tuberculin, and once on five successive days without tuberculin gives a more trustworthy

basis for estimating the effect of that agent. It will be observed that on April 1st, under the tuberculin there was a slight decrease of the total solids (0.45), on April 13th, under tuberculin a still larger decrease (1.56), but on June 5th, under tuberculin there was an increase (1.01). On June 11th to 15th, without tuberculin there was a variation in the total solids of (1.99).

Then as to the milk, sugar, 219 showed a percentage reduction of .01 April 1st, under tuberculin, and of .61 April 13th, but no change whatever June 5th though again under tuberculin, and no change June 11th to 15th without tuberculin.

Of albuminoids 217 showed a percentage reduction of .07 April 1st under tuberculin, but an increase of .13 April 13th, and of .61 June 5th.

In fat, No. 113 had a decrease in her single test, while 212 had an increase in all cases under tuberculin .31 April 1st, .13 April 13th and .82 June 5th. In her entire absence of tuberculin June 11th to 15th, she showed a variation of .51.

With such a testimony it would be disingenious to claim any constant or appreciable variation as the result of the injection of a test dose of tuberculin, into a healthy animal, even if such doses were repeated several times. So far as there is evidence before us, everything points to the harmlessness of a single test dose on a sound animal system.

TABLE IV.

ACTION OF TUBERCULIN ON GRADE SHORT-HORN COW: NEARLY DRY; FARROW.

AFTER INJECTION.

DATE	NORMAL TEMP.	RESP.	PULSE	DOSE TUBERC.	HOUR.	TEMP.	RESP.	PULSE.	HOUR.	TEMP.	RESP.	PULSE.	HOUR.
Nov. 3	100.8°			28 m.	6.30 a.m.	101.2°	20		2 p.m.	102.3°	17		4 p.m.
" 9-10	102.70			29 m.	10 p.m.	104.3°	30		7 a.m.	103.7°	22	56	9.15 p.m.
" 14-15	101°	16	54	28 m.	10.30 p.m.	101°	20	48		101.7°	20		9.30 a.m.
" 22-23	100.6°	21		28 m.	10.20 p.m.	100.8°	25			102°	22	54	
" 28-29	101°	16	43	28 m.		101.3°	20	44	7.30 a.m.	102°	16	48	9.15 a.m.
Dec. 7-8	101.5°	22	48	28 m.		100.5°	23	50	7.15 a.m.	101°	22	42	10 a.m.
" 12-13	101.6°	30	60	29 m.		101.9°	18			102.3°	17	52	10.15 a.m.

Continued.

TEMP.	RESP.	PULSE.	HOUR.	TEMP.	RESP.	PULSE.	HOUR.	TEMP.	RESP.	PULSE.	HOUR.
102.6°											
103.8°	17		5.15 p.m.	102°	21	48	7 p.m.	101.3°	13	45	9 p.m.
101°	18		11.20 a.m.	102.8°	18		2 p.m.	102°	22		4 p.m.
102°	15	50		101.5°	13	42	1 p.m.	101.5°	16	54	3 p.m.
101.9°	15	60	11.30 a.m.	101.6°	18	60	2.30 p.m.	102.4°	20	48	4 p.m.
101.3°	15	48	11.45 a.m.	101.5°	18	52	2 p.m.	101.5°	16		4.45 p.m.
101.7°	16	58	12.10 p.m.	102°	16	50	3 p.m.	101.6°	18		4.30 p.m.
	18	52		101.8°	24		2.15 p.m.	101.8°			

TABLE V.

ACTION OF TUBERCULIN ON GRADE DEVON COW: DRY: FARROW.

AFTER INJECTION.

	NORMAL TEMP.	RESP.	PULSE	DOSE TUBER.	HOUR	TEMP.	RESP.	PULSE	HOUR	TEMP.	RESP.	PULSE	HOUR
Nov. 3	101.5°			28	6.30 a.m.	101°	18		2 p.m.	102.3°	17		4 p.m.
" 9-10	101.7°			27	10 p.m.	101.8°	24	60	7 a.m.	102.1°	12		9.15 a.m.
" 14-15	101.5°	18	62	26	10.30 p.m.	102.2°	22	48		102.2°	18	50	9.30 a.m.
" 22-23	100.2°	14		27	10.20 p.m.	101°	15			102°	11	48	
" 28-29	101.2°	11	50	27	10.15 p.m.	102°	16	42	7.30 a.m.	101.2°	11	42	9.15 a.m.
Dec. 7-8	101.5°	16	60	27		101.8°	23	60	7.15 a.m.	102.3°	24	60	10 a.m.
" 12-13	101°	13	48	27		101.7°	14	43		101.1°	17	48	10.15 a.m.

Continued.

TEMP.	RESP.	PULSE;	HOUR	TRMP.	RESP.	PULSE	HOUR	TEMP.	RESP.	PULSE	HOUR	TEMP.	RESP.	PULSE	HOUR
102.6°	18		5.15 p.m.	102.6°	14	70	7 p.m.	101.9°	14	64	9 p.m.	101.8°	15	64	10.15 p.m.
102.2°	11		11.20 a.m.	101.4°	16	48	2 p.m.	101.4°	14		4 p.m.	101.5°	14		6.45 p.m.
102.2°	12	46		101.3°	14	48	1 p.m.	101.7°	16	40	3 p.m.	101.8°	24	48	5 p.m.
102°	18	44	11.30 a.m.	101.8°	18	48	2.30 p.m.	101.5°	12	40	4 p.m.				
102.2°	10	42	11.45 a.m.	101.2°	14	48	2 p.m.	101°	18	46		101°			
102°	16	58	12.10 p.m.	101.8°	16	54	3 p.m.	101.6°	14		4.45 p.m.				5.20 p.m.
101.3°	14	44		101.5°	16		2.15 p.m.	101.6°			4.30 p.m.				

TABLE VI.

Milk record of Belva for the period of the tuberculin test, and of two other Holstein cows in similar conditions apart from the test.

BELVA CALVED SEPT. 16,		MOLLY CALVED OCT. 4.	FREDA CALVED AUG. 28.	BELVA CALVED SEPT. 16.		MOLLY CALVED OCT. 4.	FREDA CALVED AUG. 28.
	LBS.	LBS.	LBS.		LBS.	LBS.	LBS.
Oct. 28,	40. 5	42.25	44. 5	Nov. 23,	38. 5*	43. 5	37.75
" 29,	39.75	42.25	44. 5	" 24,	37.75	40	37. 5
" 30,	40. 5	42.25	44. 5	" 25,	36.25	38	34. 5
" 31,	35*	37. 5	45.25	" 26,	34.25	38. 5	35.25
Nov. 1,	34. 5	40.75	36	" 27,	36.25	41	37. 5
" 2,	38. 5	42. 5	41.75	" 28,	35	41	36.25
" 3,	31. 5	34.75	40.25	" 29,	35*	41	39
" 4,	37	34.75	42.75	" 30,	34.75	41.5 served	41.25
" 5,	32	33. 5	40. 5	Dec. 1,	35. 5	42. 5	42.25
" 6,	36	35.75	41. 5	" 2,	33.75	42	41. 5
" 7,	35.15	37	45.75	" 3,	35.75	41. 5	42.25
" 8,	38.25	40. 5	47. 5	" 4,	34.75	38.75	40
" 9,	38	40. 5	46	" 5,	38.25	42.25	43.75
" 10,	38*	41.25	43. 5	" 6,	39	42.75	44.75
" 11,	39	41. 5	42. 5	" 7,	38. 5	43.75	45
" 12,	36.75	40.75	41.75	" 8,	34.75*	43.25	42.75
" 13,	41.25	45. 5	45	" 9,	37.25	43.25	42
" 14,	41. 5	42.25	47	" 10,	37.25	41.25	41. 5
" 15,	41.25*	46. 5	45.75	" 11,	35.75	41. 5	40
" 16,	39. 5	43. 5	42	" 12,	34.25	42.25	40. 5
" 17,	40.75	45	43.75	" 13,	37.25*	43	39. 5
" 18,	41	45	43.25	* Indicates the 20 hours following the different tuberculin injections.			
" 19,	42.25	48	43.25				
" 20,	38	42. 5	42				
" 21,	37.25	43	41. 5				
" 22,	37.25	44. 5	37 served				

TABLE VII.

Milk record of Daisy during the period of the Tuberculin test, and of another Jersey cow under similar conditions apart from the test.

DAISY CALVED SEPT. 12TH.		BERTHA CALVED SEPT 17,		DAISY CALVED SEPT. 12TH.		BERTHA CALVED SEPT. 17.	
	LBS.		LBS.		LBS.		LBS.
Oct. 28,	20.75	Oct. 28,	29.25	Nov. 23,	18. 5*	Nov. 23,	26. 5
" 29,	20.75	" 29,	27.75	" 24,	17	" 24,	25. 5
" 30,	22.25	" 30,	29.75	" 25,	17	" 25,	26
" 31,	21. 5*	" 31,	26.	" 26,	18	" 26,	23. 5
Nov. 1,	19	Nov. 1,	27.75	" 27,	17	" 27,	23, served
" 2,	20.25	" 2,	27.25	" 28,	19	" 28,	23
" 3,	19	" 3,	26	" 29,	18*	" 29,	24.25
" 4,	20. 5	" 4,	26.75	" 30,	17	" 30,	23
" 5,	17.25	" 5,	24.75	Dec. 1,	17	Dec. 1,	24. 5
" 6,	19.75	" 6,	24	" 2,	19	" 2,	26
" 7,	17.75	" 7,	26.25	" 3,	16	" 3,	25. 5
" 8,	19. 5	" 8,	30.25	" 4,	17	" 4,	24
" 9,	21	" 9,	30.25	" 5,	16	" 5,	26. 5
" 10,	19.25*	" 10,	28	" 6,	17	" 6,	26
" 11,	17	" 11,	27. 5	" 7,	15	" 7,	28.25
" 12,	18. 5*	" 12,	28. 5	" 8,	15*	" 8,	27. 5
" 13,	20	" 13,	29.75	" 9,	17	" 9,	27
" 14,	19	" 14,	27.75	" 10,	15.75	" 10,	24.25
" 15,	17. 5	" 15,	29	" 11,	16.75	" 11,	26.25
" 16,	19.75	" 16,	32. 5	" 12,	17	" 12,	27
" 17,	18.25	" 17,	33. 5	" 13,	15* served.	" 13,	26.75
" 18,	19. 5	" 18,	30	* Tuberculin in system; the day following injection.			
" 19,	17. 5	" 19,	30.75				
" 20,	20. 5	" 20,	25. 5				
" 21,	18	" 21,	30				
" 22,	19.25	" 22,	27				

TABLE VIII.

Percentage of Butter-fats in milk of Belva during experiment, also in Holstein cows, Molly and Freda not injected.

	BELVA.	MOLLY.	FREDA.	
Oct. 20th,	3.6%	4.9%	3.2%	Three days before first injection of tuberculin.
" 27th,	2.85%	3.85%	3.5%	
Nov. 3d,	3.2%	4.25%	3.55%	
" 10th,	3.2%	3.8%	3.35%	Three days after tuberculin injection.
" 17th,	3.3%	3.75%	3%	Under tuberculin ; injected night before.
" 24th,	2.9%	3.65%	3.3%	Two days after tuberculin.
Dec. 1st,	2.8%	3.95%	2.95%	One day after tuberculin.
" 8th,	3.4%	3.4%	3.1%	Two days after tuberculin.
				Under tuberculin ; injected night before.

TABLE IX.

Percentage of Butter-fats in milk of Daisy during Tuberculin experiment, also of Jersey cow Bertha not injected.

	DAISY.	BERTHA.	
Oct. 13th,	5.1%	4.8%	Three days before first injection of tuberculin.
" 20th,	5.6%	4.45%	
" 27th,	5.1%	5.5%	
Nov. 3d,	5.3%	5.5%	Three days after tuberculin injection.
" 10th,	5.5%	5.3%	Under tuberculin ; injected the night before.
" 17th,	5.5%	5.4%	Two days after tuberculin.
" 24th,	5.4%	4.25%	One day after tuberculin.
Dec. 1st,	5.05%	5.1%	Two days after tuberculin.
" 8th,	4.9%	4.85%	Under tuberculin ; injected the night before.

TABLE X.

Percentage variation in the Constituents of the milk of Healthy Cows under a test dose of Tuberculin.

ANIMAL.	DATE.	TOTAL SOLIDS.	SUGAR.	ALBUMINOIDS.	FAT.	ASH IN MILK.	ACIDITY LACTIC ACID.	
No. 113	March 31,	11.01	4.17	3.26	2.54	.775	.176	Before Injection
" "	April 1,	10.69	3.84	3.20	1.52	.696		After "
" 217	March 31,	10.83	4.17	2.96	2.23	.723		Before "
" "	April 1,	10.38	4.16	2.89	2.54	.700		After "
" "	" 12,	11.03	4.17	1.26	2.56	.681		Before "
" "	" 13,	9.77	3.37	1.39	1.53	.727		After "
" "	May 31,	12.03	4.16	2.82	2.43	.711		Before "
" "	June 1,	10.25	4.16	2.29	1.27	.666		" "
" "	" 5,	11.26	4.16	2.70	2.03	.688		After "
" "	" 11,	11.97	4.16	4.17	2.03	.590		No "
" "	" 12,	10.82	4.16	3.83	1.52	.692		" "
" "	" 13,	11.30	4.16	3.97	2.02	.751		" "
" "	" 15,	11.62	4.16	4.25	2.03	.767		" "

REMARKS ON SOUTHERN CATTLE FEVER.

By W. H. HARBAUGH, V. S.

(Read before the Virginia State Veterinary Medical Association, Charlottesville, Va.,
January 3, 1895.)

Texas fever, Southern cattle fever, or, as it is better known to the public in this State, murrain or bloody murrain, is a subject of vast importance to every member of this association, as we all reside and practice either within the territory designated by the United States authorities as the permanently infected district, or close to the so-called line of the infected district, where cases of the disease are liable to occur at any time during the season of the year the fever manifests itself, and we are therefore called upon to treat the disease as practical veterinarians, not as investigators or theorists.

The cattle owner does not care how well we are read up on the subject; the difference in opinion as to the real cause of the malady is nothing to him; his animal is suffering with a disease generally supposed to be fatal, and he wants it relieved. We are called upon to relieve it, and we must do our best under the circumstances, or else acknowledge that we do not know enough about this particular disease to attempt treatment. That the disease is the least understood and the most generally misunderstood by the profession at large, and the public as well, there can be no doubt, but it by no means follows that the treatment is hopeless, as I will endeavor to demonstrate later on.

Many of the erroneous ideas in regard to the malady are the direct result of veterinary writers who, knowing nothing of the subject themselves, depend on the writings of others for their knowledge, and usually fail to understand what they read. As an example of such ideas, I will quote from an article in the December REVIEW :

“The microparasite is always present in Southern cattle, even if they have been away from the Southern pastures for a few years.

“All Southern calves go through a natural inoculation by the ticks, at which age

the death-rate is very small; when I say all Southern calves, I think I am right, as the ticks are pretty well scattered all over the territory, when the winter is not severe enough to destroy them."

The points which I particularly desire to call your attention to at this meeting are the following:

(1) The whole territory known as the permanently infected district is not infected. There are farms and sections of counties within this so-called infected area, which are as free from infection as any place North of the Potomac.

(2) All Southern cattle are not dangerous. There are cattle raised on certain farms in the South as free from the disease as if they had been raised in any Northern State, and when these cattle are taken to other farms, perhaps but a mile or two distant from where they were born and raised, they contract the disease.

(3) All Southern ticks are not dangerous. Right here in the so-called permanently infected district, there are farms where ticks are on cattle at all times, and when cattle are put on the farms from outside the infected district, no harm has resulted.

(4) All acute cases of the disease are not hopeless ones to treat. Mild ones are favorable, and frequently recover without any treatment, and often in spite of the most atrocious treatment.

Before proceeding further, I wish it to be well understood that I am not here to criticise the work of the Bureau of Animal Industry. On the contrary, I am of opinion that the work of the Bureau stands unequaled by any similar body the world over, and should receive the hearty support and encouragement of every veterinarian who has at heart the interest of this country and his profession. But that there is room for honest difference in opinion on this subject is unquestionable, and, in fact, if you will carefully read the special report on Texas fever, you will be informed by the investigators of many doubts which they freely point out.

I will also say here that so far as the disease is concerned, in my opinion, the only works of practical importance to us as

veterinarians are the reports of the United States Agricultural Department and the Bureau of Animal Industry, beginning with special report No. 22, 1880.

I had my first serious outbreak to contend with in the fall of 1886, on the farm of Col. A., in Chesterfield County. Many of this herd were born and raised on the farm, others were brought from Maryland and other States, added from time to time as the owner secured valuable animals to improve his herd.

About twenty of the cattle were effected with the disease, either in the mild or acute types. About six died, including a noted cow, which cost her owner \$3,250.00. From the first I did not hesitate in my diagnosis of Texas fever. Post mortem examinations confirmed my opinion. My standard authority was Dr. Salmon's article on the subject, in special report No. 22. The history, symptoms and post mortem lesions, as given in that article, are to-day the best extant for the general practitioner so far as I know.

Col. A. would not believe that the cattle were affected with Texas fever, because they had no ticks on them. Thorough search was made for ticks, but none were found. The cattle stable was a clean, well kept place, thoroughly ventilated and drained. The cows were cleaned daily, and when I tell you that they were cleaned with a curry-comb and brush, and with water and soap, if necessary, you will understand what I mean by saying they were cleaned daily. You will also probably understand why no ticks could be discovered on them.

This was my first experience with the tick theory, which I did not believe, and, as a consequence, I was both amused and annoyed by the Colonel's obstinacy in regard to it, because, at that time, all I knew about the disease I learned from special report No. 22, in which Dr. Salmon says :

“One of the most widely spread opinions in regard to the causation of Southern fever is the pathogenic influence of the ticks with which Southern cattle are generally covered, and which migrate in large numbers to the bodies of other cattle with which they mix. But the acceptance of this view is simply an evidence of the desire of the human mind to explain the origin of mysterious phenomena. The same principle is exhibited in the popular views regarding the pathogenic nature of hollow-

horn, hollow-tail, wolf-teeth, black-teeth, hooks, etc., none of which have the least foundation in fact or reason. The tick theory scarcely explains a single one of the many peculiar phenomena of the disease. Ticks are not kept from cattle by a fence. They are found everywhere, but are simply more numerous at the South. Their attacks are not confined to the latter half of the summer; nor would they be likely to remain on a pasture from spring to August without doing harm, and then suddenly cause an outbreak of the disease. Again, the post mortem examination plainly indicates the cause of the disease to be an agent taken into the circulation, and causing the most important changes in the composition of the blood."

The foregoing disposal of the tick theory by Dr. Salmon in 1880 has much to commend even now, in 1895, notwithstanding the recent discoveries by the Bureau Investigators, in which the tick has occupied a prominent position.

My ideas in regard to the cause of the disease were also taken from special report No. 22, in which Dr. Salmon says: "It may be doubted if the fever would attack animals unless they had eaten grass which had been soiled by the excretions of the Southern animals, or, at least, which had been so near these excretions as to be contaminated by them."

Now, this idea of the cause was fully supported by the circumstances connected with the outbreak in Col. A.'s herd. Up to this outbreak there never had been a case on the farm known to any one connected with it. Many of the cattle were born and raised on the place, while cattle from the North were put on the farm at frequent intervals with no bad results. A few weeks before the outbreak some strange cattle broke through the fence and had pastured half way of the field in which the herd was grazing before they were discovered and put out. This was the only way that field could have been infected. Of course ticks could have been dropped on the pasture by these 'strange' cattle, but, as I said before, none were found on Col. A.'s cattle. I, of course, attributed the infection to the excretions of the strange cattle.

After the outbreak of the disease, the herd was removed from the pasture to the stable and stable lot, where it was kept until after cold weather set in. In this outbreak the disease attacked young and old, cows that were born and raised on the place, as well as animals from the North.

I fully believe that cattle born and raised on an infected farm acquire immunity from the disease, and I am quite sure that such immunized cattle convey the infection to non-infected pastures, and it is by this means only that the infected area is extended or perpetuated.

Cattle born and raised on a non-infected farm, sicken and probably die when put on an infected farm, although the infected farm may only be on the other side of a fence, or on the opposite side of a road.

So far as I know there is but one way to tell an infected farm from a non-infected farm, and that is by testing the pastures in the proper season by placing on them cattle from a farm known to be non-infected.

Richmond City and the adjoining counties have been within the so-called infected area since the line was mapped out, and that there are many non-infected farms and sections in the vicinity is proved by the fact that hundreds of cattle born and raised on these farms die annually when brought to Richmond and turned out to pasture on the commons during the day, where they contract the disease.

Animals placed in a dairy stable, where the cattle are stalled entirely and only have the run of a yard wherein there is no grazing, neither infect others nor are liable to infection no matter where they are born and raised.

To better illustrate some of the points I have called your attention to, I will read a letter from Mr. W. E. Grant.

Grantland, Va., December 13th, 1895.

Dr. W. H. Harbaugh,
Richmond, Va.

Dear Sir:—Your letter of the 12th inst. to hand. I have never seen a case of Southern fever, except at Colonel ———, where you were then in attendance. As you know, my place is above, and on the opposite side of the James River. I have never heard of a case in my immediate neighborhood, though on the opposite side of the river, I have heard great complaints of sickness (of this nature, I suppose). Cattle which I have sold to go to Chesterfield have died, though in perfect health when I delivered them.

I have brought cattle to my place from the mountains of North Carolina and Virginia, New York, Pennsylvania, Holland, and almost direct from the Island

of Jersey. I would not hesitate to hiring cattle from any place on the face of the earth to my farm if healthy at the time of removal. I have often seen ticks on my cattle, but am not aware that they did any especial injury.

My farm is fenced, but other people's cattle often get in with mine (I don't like to own it, but mine sometimes return their visits).

My cattle are out in the pasture every day in the year, unless there is falling weather, or it is extremely cold. I have been and am very careful that my cattle shall never have access to stagnant water. This is the only precaution I have ever deemed necessary.

James River is practically an insurmountable barrier between the two counties; therefore I know very little about Chesterfield Co., but I have always understood that cattle in that county had but few restrictions placed upon them. It is unfortunate that so large a portion of the U. S. should be placed under a band, simply because a few places within that limit have been found unhealthy.

Yours truly

(Signed) W. E. GRANT.

Mr. Grant is a well-known gentleman, a reliable and practical breeder of Holstein and Jersey cattle, and implicit confidence may be placed in his statement. His farm Grantland, is about five miles west of Richmond, in Henrico County, and in the so-called permanently infected district.

You must bear in mind that within the so-called infected area, a cow born and raised on an infected farm, although insusceptible to the disease, and apparently healthy in every respect, will infect a non-infected pasture by grazing in it. And that a cow born, and raised on a non-infected farm will contract the disease while grazing on an infected farm, and that an infected field may adjoin a non-infected field.

These are curious facts, but facts that are as well known to the practitioner, as the unmistakable symptoms of the disease. Of course there may be isolated instances which might be quoted as exceptions.

It is not my intention to occupy much of your time with the tick theory. I do not question any of the discoveries made by the Bureau Investigators, as far as they go, but you must remember that those experiments were conducted outside the so-called infected area, and seemingly with the object of connecting the tick with the cause of the disease.

Important as are their discoveries, there are many missing links, and while they have placed about all the responsibility on the tick at the experiment station, I am still of opinion that there are other factors, as important, if not more so, in the so-called infected area where the disease occurs seemingly without ticks, and where it does not occur in spite of ticks.

However the tick theory should not be discarded. It should be carefully considered and intelligently understood, and if your observations in practice support it, you should not hesitate to confirm it as one of the factors that spread the infection in this state. More good can be done by assisting the Bureau in its efforts to solve doubtful points than by placing obstacles in its way, or by trying to prove it wrong.

(To be continued.)

HYDROPHOBIA.

By J. H. ADAMSON, D.V.S., Charlottesville, Va.

(Read before the Virginia State Veterinary Medical Association.)

(Concluded.)

In the earlier stages, sexual excitement is usually a prominent symptom, both in animals and in man. When a rabid dog is at large, and is noticed trotting along in the characteristic straight line, he always alters his course (when compelled) by turning at right angles, and never deviates from this rule unless driven to it by a furious mob. When he reaches any article, he does not think of going out of his path to clear it, will pass through a hedge or ditch, or attempt to climb over it or under it, never giving up until he is completely exhausted.

When the disease first declares itself, it not infrequently happens that the wound which had rapidly and entirely healed after the bite, begins to exhibit evidence of irritation or inflammatory action, tingling and itching severely, which causes the animal to gnaw and bite it, without even feeling the slightest

pain therefrom, as though there was a morbid sensation of numbness in that region. In the earlier stages constitutional disturbance and slight fever is present, with a rise of temperature to 104° , great nervous excitability, respiration of a peculiar sighing or sobbing character, and somewhat tumultuous. Toward the last, the agitation of the victim becomes increased, and the countenance is one of extreme terror and a marked embarrassment in the breathing, which is spasmodic or convulsive. He suffers from acute thirst, and when he swallows, violent paroxysms produced by spasm of the pharynx and larynx seem to suffocate him, which continues for several seconds, and are succeeded by feelings of intense alarm and distress. The attempt to drink is again renewed, but only to be followed by a repetition of the seizure until the unhappy sufferer ceases from sheer dread to quench his thirst, which torments him.

The patient is always susceptible and extremely sensitive to any kind of external impression. A bright light, a loud noise, a breath of cold air, contact with any one, are all apt to produce a convulsive seizure. Besides these suffocative attacks, there also occur general convulsions affecting the whole muscular system, and which is often thrown into a condition of tetanic spasm. These spasms increase in frequency and severity, with intervals of comparative quiet as the disease advances. In man, and other animals than the dog, the breathing becomes more laborious and jerking, accompanied by peculiar sonorous expirations, which often suggests to observers the notion that the sufferer "barks like a dog." During the latter stages there is always a viscid secretion in the mouth, which is ropy, thick and gluey. There is never great fever, but the bowels are always constipated and diminished flow of urine. After two or three days of suffering of the most terrible description, the animal succumbs, death taking place, either from a paroxysm of choking, or in a tranquil manner from nervous exhaustion, all the symptoms having abated, and the power of swallowing returning shortly before the end. The duration of the disease is generally from two to five days.

Treatment.—Medicinal treatment of rabies is of no avail whatever. An antidote for the ptomaine has not yet been discovered. Pasteur says that the blood serum of a recovered case after undergoing certain preparation and treatment, at present only known to his laboratory, is a speedy and sure cure. However the world has not as yet recognized the fact.

Madstones, and the one thousand and one decoctions made from herbs, gathered only when the moon is under certain conditions, and hosts of other worthless nostrums, are all sterling phases of charlatanism, empiricism, and quack humbuggery. When hydrophobia has once declared itself, little can be done by the resources of the veterinarian or physician beyond palliating the agonizing sufferings, and thereby rendering easier and calmer the inevitably fatal termination.

Medicines cannot be administered by the mouth, owing to the impossibility of swallowing, the distress occasioned by the effort to do so, and the great risk of being bitten by the sufferer; therefore, anything given must be per rectum, hypodermically, or by inhalation. The most potent agents are the bromides, opium, its alkaloids, curara, chloral, chloroform, and hydrocyanic acid. The vapor bath is also recommended, but in this also, great risks are run. Prophylactic treatment is the only rightful course to pursue, and of most avail. When an animal or man is first bitten by a rabid or apparently healthy dog, endeavor to prevent the absorption of the virus into the system. This may be accomplished by complete excision of the part involved in the bite, or by sucking the wound by a cupping glass, or even by the mouth if practicable, after which the part ought to be thoroughly cauterized by nitrate of silver, caustic potash, nitric acid, or better still, actual cautery. Then place the animal in confinement to await developments; one month is considered a long enough period.

Do not kill the dog, as it prevents the person bitten from knowing whether hydrophobia will develop or not. If it does not mature, the persons bitten are perfectly safe and may sleep easy.

The reprehensible practice of muzzling dogs in hot weather ought to be prevented by law. No animal suffers more intensely from thirst than the dog, and it is gross ignorance on the part of the laity who practice it and it is cruelty to the animal, and serves no good end whatever.

Pathological Anatomy. — Post-mortem examinations have thrown much new light upon this malady, and much special attention has been given by certain eminent pathologists to this work. The chief morbid changes which are described are evidences of congestion and inflammatory action in certain portions of the brain and spinal cord, and most particularly in the locality known as the “respiratory centre” of the medulla-oblongata, where the accumulation of “lencocytes” around the small blood-vessels and in the surrounding nervous substances are a prominent phenomenon, similar changes are also found in the salivary glands.

On the whole, however, it can scarcely be said that the formidable array of symptoms above narrated are accounted for by these appearances, which in the opinion of some, are in all likelihood merely the results of antecedent processes of an occult nature, affecting the nerve centres, and forming the essence of this disease. The eighth pair of nerves, which are largely concerned in the processes of respiration and deglutition, are congested in a marked degree, and it is upon this portion of the nervous system that the poison or ptomaines most powerfully exerts its specific action. But that the whole great nerve centres, viz., the brain and spinal cord, as a whole, are profoundly affected, is manifest in the tendency to general convulsion, the remarkable hyperaesthesia, and the mental perturbation of the victim.

I could write more than I have already written on the latest experiments on rabies, and remarks on post-mortems by many able men, also much on treatment by our recent bacteriologists such as Sternberg, Gmelin, Lehman, Marchand, and others, but of this you can read at your leisure. I will, however, quote one master mind, at the risk of him quoting Pasteur.

“From the symptoms observed during life, the conclusion naturally suggests itself that the brain and its membranes are the seat of organic lesions. Indeed the specific action of the poison appears to be exercised, particularly in the first instance, upon the medulla-oblongata and the par vagum, the branches of which seem to lose their natural properties, hence the difficulty in swallowing, breathing, the depraved appetite, alteration of voice, and its entire loss in the dumb form, as well as the convulsions of the respiratory muscles, are all due to the derangement of this nerve, and as the nervous system becomes more and more deranged, complete paralysis of the respiratory muscles occur, and the animal dies of asphyxia.

“The principal post-mortem appearances are œdema, or congestion, sometimes in patches, of the brain and spinal cord, particularly at the base and plexus choroides, effusion into the arachnoideal space, cerebral ventricles, and the cerebro-spinal substance and softening of the membranes. On the lower surface of the medulla-oblongata, at the margin of the seventh, eighth, and ninth pair of nerves, the membranes are generally thickened, softened, and clogged together. The liver, spleen, kidneys, and muscular system are congested. The bladder is empty and its mucous membrane covered with petecchiæ. The lungs are engorged with blood. The blood in the vessels is imperfectly coagulated, often black and tarry, sometimes bright and red in appearance.

“The mucous membrane of the pharynx, œsophagus, stomach, and bowels are either greatly congested or diffusely inflamed. Patches of extravasation are particularly met with on the gastric mucous membrane, which accounts for the hemorrhagic vomiting which is often witnessed during the illness. The contents of the stomach consists generally of hay, straw, stones, gravel, etc., in fact of a collection of the most incongruous materials, which, owing to the depraved appetite, the animal has picked up during life. This fact is of great value, as it proves almost conclusively that the dog has died rabid. The tongue is often wounded by the teeth, its papillæ congested, and the salivary

glands enlarged and vascular. In "dumb madness" the congestions of the upper part of the respiratory tract are developed to a greater degree than in any other form of this disease."

Remarks:—John Hunter says: "Individual susceptibility must be taken into account, as it is undeniable that many persons in whom the virus of rabies has been inoculated, escape hydrophobia. One instance that came under my notice, in which twenty-one persons were bitten by a rabid dog (proven so, beyond doubt) and only one died subsequently from hydrophobia, and comparisons by authentic authorities go to show that not one-third of those persons bitten by rabid animals die of rabies. A person bitten through his clothing is comparatively safe; only one per cent. die of rabies.

"It is supposed by some that the bite of an angry dog may produce rabies, and all the more so, if the animal should develop hydrophobia years after. The non-rabid animal, however enraged, cannot give rise to hydrophobia by his bite. Many persons die from mental derangement (delirium) produced by the fear of the consequences following a bite."

Treviranus found that all saliva reddened by the addition of sesquichlorid of iron; Leopoldi Gmelin discovered that this was caused by a sulpho-cyanate which is present in saliva. Poisoning from cyanic acid resembles slightly the latter stages of rabies.

The following paragraph appeared in the London *Herald of Health*, 1894: "It has been stated in this journal on previous occasions that the virus of rabies can be removed from perspiring animals by means of vapor baths. In non-perspiring animals, such as the dog, wolf, cat, and other flesh-eating animals, it is considered to be invariably fatal in its effects. Such animals should not be kept in captivity, unless kept hygienically clean, otherwise they are dangerous amidst human life. Any poison or virus that enters the body permeates the whole system. The pores of the skin allow much of its escape. In the non-perspiring animals this cannot occur, hence great muscular action, during rabies, in the dog. Dr. Buisson, Paris, France, was in-

oculated with the virus of rabies from a patient, and the symptoms of the disease having become extreme, he resolved to die in vapor bath of 127° F., but instead of dying he was cured. This was twenty-nine years ago, and Dr. Buisson is living to-day, so there is no likelihood of the disease lying latent. It was not suppressed, it was entirely removed, and that beyond a doubt. Dr. Buisson has compiled a work on this treatment, and quotes many instances of recovery from rabies by vapor treatment that have occurred in his practice."

M. Pasteur wrote to a lady in Glasgow, Scotland, last year: "The bite of a dog is only dangerous when he is suffering from rabies. If there is any doubt about the animal's disease (if diseased) observe the following advice:

"Place the animal where it can do no further harm, have it examined by a qualified veterinarian, he will soon discover the characteristic symptoms of rabies. If suffering from rabies, he will surely die in eight days. If, at the end of two weeks, no symptoms of rabies have developed, the bite cannot cause hydrophobia, and there is no reason that the animal should be destroyed."

REPORT OF CASES.

LEFT LATERAL CURVATURE IN A FILLY.

By W. C. SIEGMUND, D.V.S.

This interesting case is that of a bay mare, three years, foaled a monstrosity with a left supero-lateral curvature of the spine. She is otherwise in perfect health. Her deformity consisted in having the appearance of being hunch backed with a peculiar condition of the spine. Looking from upwards, a lateral curvature with its convexity turned to the left is observed, presenting a curve of the spinous processes towards the left of the median line, extending from about the fourth dorsal to the second lumbar vertebræ, with a deep concavity looking to the

right. The right lateral view presents this hollow having on the posterior end a large prominence, hard and painless, with some soft spots here and there also bent to the left, and extending from the eighth or ninth dorsal vertebræ backwards and spreading upon the upper third of the ribs. The whole left side of the chest is bulging and more prominent, while the flank on the right is very hollowed as if the last two ribs were missing.

The animal lays down on either side and gets up without difficulty, all his functions seem perfectly normal.

The animal was destroyed in the dissecting rooms by bleeding and injected with plaster of Paris.

On removing the skin of the trunk, the parnniculus carnosus was observed to be pale, thin and very much distended on the left side, the superficial aponeurosis of the spinal muscles being very densely drawn and thin. The muscles on the right side presented nothing abnormal. The viscera were removed and found perfectly healthy. The vertebral column was then separated at the neck and lumbo sacral joint, the ribs left attached to the spine were sawed towards the upper third and the specimen, seat of the deformity prepared for the museum of the College.

It showed from the superior view the curvature of the vertebral spine, bodies and spines of these vertebræ from the 9th to the 18th, the bodies of the lumbar vertebræ are somewhat depressed to the right. On the right side the first eleven ribs present their normal curvature, but between the 12th and the 16th there is a wide depression which disappears at the last three ribs which have resumed their normal position.

Looking on the internal view, lower face of the bodies of the vertebræ, these concur in forming a large figure S, with the ten last dorsal. The posteroc aorta presents the most interesting aspect. It follows the dorsal vertebræ in their curvature and forms also a large S with a kind of constriction back of the origin of coeliac axis. Towards the back of the loins it has resumed its normal position until its quadrification. All the collateral are apparently perfect.

EXTRACTS FROM FOREIGN JOURNALS.

SUBNORMAL TEMPERATURES.

BY E. F. DE JONG, F. R. C. V. S., Edinburgh.

An extract on the above subject which appeared in this week's *Record* has led me to pen these few remarks.

The use of the thermometer in veterinary practice cannot be over estimated, but we are apt to use it simply for the purpose of obtaining the amount of fever present. If after its application there is no indication of a rise above the normal we, as a rule, are quite satisfied; but it seems to me that we neglect to note if the temperature be *subnormal*, which is a point of considerable importance and might greatly assist us in our diagnosis.

I have recently had under treatment a case of "diabetes mellitus" in the horse, in which a subnormal temperature was marked, on one occasion being as low as 98.2F and never rising above 99.5.

If this temperature is constant in this disease it is a most important clinical fact, because this form of diabetes is not often met with in the horse, or at least I should say diagnosed.

The symptoms were intense thirst, coat dry and harsh, general unthriftiness, frequent micturition, etc., (very similar to those of the ordinary form) but my attention was directed to urine which was high colored and thick, the very reverse of diabetes insipidus.

I had some urine collected for me and it appeared very similar to the "golden syrup" of the grocer, but perhaps not quite so viscid.

Upon testing it with Fehling's solution it gave the characteristic reaction of sugar, but as this solution cannot be relied upon, unless freshly prepared, and as I had not other chemical re-agents handy for confirmatory tests, I took some of the urine to the Royal Infirmary in this city, where it was tested and reported to me that sugar was detected in large quantities.

Another point worth noting was the specific gravity, which instead of being diminished as in the insipidus form was greatly increased, it being 1060.

I have related this case not only to show that diabetes mellitus occurs in the horse, but also to record the subnormal temperature, which if it be constant, as already stated may be a most important factor in the differential diagnosis from diabetes insipidus. I would therefore suggest that more attention be paid to subnormal temperatures, from which I am sure there is a great deal to be learnt.

I will be pleased to hear through the medium of your valuable paper if any practitioners have met with subnormal temperatures, and in what diseases.—*Veterinary Record*.

HYDRO-THORAX.

Hydro-thorax can only be regarded as a grave complication of disease of the pleura, and perhaps other organs, consequently any treatment which will prevent or remove it is well worth our serious consideration. In your issue of September 29th, 1894, Mr. Malcolm draws attention to a method of treatment adopted by him, viz., the administration of iodine, and asks for the experience of others. A brief account of a case which occurred last November may prove interesting.

Subject, a brown cart gelding, five years old, under treatment for pleurisy. Four days after its admission to the infirmary signs of hydro-thorax were discovered, next day they were more pronounced, and on the sixth day the symptoms had become so aggravated that it was decided to relieve the dyspnœa by tapping, and also try the effect produced by the administration of iodine. The operation was performed with a fine trocar and canula on the animal's right side, and about five gallons of fluid abstracted. The fluid was of a dark straw colour, and when it flowed into the bucket caused a quantity of white froth, it was, in short, simply blood serum.

As the tincture was the only form in which the drug was

then available, half ounce doses were administered three times daily in bolus, along with dram doses of iodide of potassium. This was continued for a week, and as the improvement following the operation was maintained half ounce doses daily only were given with vegetable tonics for some days longer. The horse showed great weakness, but was discharged quite fit for work in nine weeks from the commencement of his illness.

The ending of this case is highly satisfactory, but there are several points which will bear touching upon. First, how much of the credit of the cure is due to the operation and how much to the drug, or are there other unnoticed causes contributing to this favourable result? To determine these points requires a larger experience than one case. In the writer's experience the operation of paracentesis thoracis always affords relief and prolongs life, but very few cases have made a permanent recovery. When the operation had to be repeated death always followed. This case, however may be an exceptional one, but the result encourages a further trial of the drug. Perhaps if it had been administered earlier the effusion would have been checked and the necessity of an operation avoided. It may be mentioned that the late Professor Dick, in his lectures, used to relate a case of ascites in the dog which he cured by the administration of iodine. CYCLOPS.—*Ibid.*

PURPURA HÆMORRHAGICA, IODINE TREATMENT.

BY JOSEPH FORGHAM, Hinstock, Market Drayton.

Subject, a black cart gelding, 9 years old, had been suffering from a bad cold or influenza, but with the exception of a few nashes and rest had received no treatment. I was requested to see him on Sunday morning, 6th January, 1895, at 11 a.m., and found the following symptoms:—

Both hind legs very much swollen right up into the thighs, with a serous oozing through the skin, dropping from the inside of the limbs. The sheath was swollen. The abdomen, for a

short space, appeared normal, swelling then commenced at a well marked line, and extended between the fore legs and over the breast. The lips and nostrils on the right side were slightly swollen, with a sero-sanguineous discharge from that nostril. Pulse 70, temperature 104, respiration increased about a third; refused all food and could scarcely be made to move.

Having read the translation by Mr. Dollar, and the report of Mr. Hopkin of Manchester, I decided to try iodine and iodide of potassium at hand I gave 3ii of the tincture and 3i of iodide of potassium. Saw the horse again at 7.30 p.m., much the same with regard to the swellings. The discharge from the nostril was less and the oozing from the thighs had almost ceased, the respiration about normal, pulse 60, temperature 105; ordered the dose to be repeated.

Monday 7th, 9.30 a.m. Respirations normal, pulse 60, temperature 103.5. Discharge from nostril and oozing from the thigh had ceased; swelling of the thighs decreasing, that on chest unaltered. The swelling of the lips had extended to the left side. The horse looked comfortable and was able to move about with comparative freedom, he had eaten a bran mash and some hay. I gave 3ii tincture of iodine and left a similar dose to be given in the evening.

Tuesday 8th, 10 a.m. Horse much improved, respirations and pulse normal; temperature 101; was feeding well, moved quite freely, swelling of the nostrils and lips much reduced, the thighs to a little above the hocks looked all right, the sheath and chest still swollen. Repeated the tincture morning and evening as before.

Wednesday 9th, 10 a.m. Very much worse, respirations increased; pulse 70; temperature 104. Nostrils and lips swelling fast, sero-sanguineous discharge from both nostrils and mouth very profuse, far worse than it was at first; the tongue a very bad colour and thickly spotted. Unable to give medicine by the mouth (which had been done up to this date), I diluted the tincture with four parts water and injected 3v into the trachea, further diluted 3ii of tincture and injected into the

rectum. Had the nose sponged and afterwards dressed with the solution, beginning at the top of the swelling.

8.30 p.m. Worse than ever to look at, respirations quite as good, the pulse I was surprised to find less frequent and of a better character, the temperature was also down to 102.4. The discharge from the nostrils still profuse; could neither eat nor drink, the swelling of the lips being very bad, worse than the nostrils, the swelling by this time extended to two inches below the eyes. I had prepared a solution as given by Mr. J. A. W. Dollar, consisting of iodine, 1 part, iodide of potassium 2 parts, water 100 parts. I injected 3vii into the trachea, I also gave an injection into the rectum, but it was not retained long so gave a little more, further diluted. I then painted the head with the solution, beginning just above the swelling until I had thoroughly saturated the part. I had taken a tracheotomy tube with me, but did not think it was worth while to put it in as the breathing appeared easier.

Thursday 10th, 9.30 a.m. Was surprised to find the horse eating hay; the swelling about the lips being very much less he was able to pick up the hay and feed fairly well; the discharge from the nostrils had ceased, the swelling all over the head being much reduced, the injection into trachea appeared to cause no inconvenience so injected 3iv of the solution. The injection into the rectum had caused some irritation, the sphincter ani being very relaxed. Did not take the temperature; pulse 50 and stronger; respirations much improved. Painted the head again with the solution.

4.30 p.m. During the day he had eaten a fair quantity of fodder, some mash, and appeared thirsty. Gave 3ii of iodide of potassium in the drinking water.

Friday 11th, 10 a.m. Still improving in every respect. Repeated iodide of potassium in the drinking water, morning and evening.

Saturday 12th. Better, with the exception of being very lame on the off hind leg, but without swelling. Continued the iodide.

Sunday 13th. Doing well, the lameness having disappeared. Gave ferri sulph, as a tonic in the mash.

Monday 14th. Going on well, but would not eat the powders in his food, so gave ferri perchlor, in the drinking water; after which he received nothing but tonics for a few days, and has now made a good recovery.

Should I meet with another case I shall inject the solution into the trachea for a few times, and also increase the dose by the mouth, with the hope of preventing such a relapse as I had in this case.—*Ibid.*

REPORT OF COMMISSION AND SANITARY BOARD.

ILLINIOIS.—from which among interesting items on *Actinomycosis*, showing an inspection of 4046 heads, 1879 post-mortem and of 1361 carcasses condemned as unfit for food, on *Tuberculosis*, with a low record as to its presence in the state, on *Texas fever*, on *Anthrax*, on *Glanders* where 56 animals were slaughtered as diseased, on *Maladie, die Coit*, with one case only to record, and on *hog cholera*. We extract the following from State Veterinarian M. R. Trumbower, D. V. S.

“I made ninety-six trips for investigation outside of Chicago and Springfield, and visited 107 farms or residences; subsequently revisited fourteen of the places.

During this number of investigations, I found glanders and farcy twenty-five times.

I made about 1,900 post-mortem examinations of cattle (at Hess Bros'. and at Nash Bros'. slaughter houses in Chicago) that were arrested and quarantined by your agents for being actinomycotic and unfit for human consumption.

I spent fifty-five days at these houses for this purpose, and condemned, by warrant of authority as city meat inspector, 1,361 head; fifty-eight of which tuberculous, fifteen affected with cancer, and twelve were condemned for other causes, all the re-

mainder were extensively affected with actinomycosis and deemed unfit for the market to be used for human food.

I made one trip to Kansas City, Mo., in November, 1893, to attend an Inter-State Sanitary meeting. Last June, by your request, I attended the meeting of the National Live Stock Sanitary Convention at Washington, D. C., and last September, as your delegate, I attended the meeting of the United States Veterinary Medical Association, at Philadelphia, Pa., where the question of the control of tuberculosis among cattle was fully discussed.

I met during the year with your board, or some of its members, by request, 46 times. I am pleased to state that my work has been agreeable, that I met no opposition anywhere in carrying out the provisions of the law, and that I believe the sanitary work pertaining to your commission is growing in favor, and its value is being appreciated more and more each year by the people of the State."

MASSACHUSETTS.—A most interesting report and probably one of the most important in our days containing as it does the details of the investigations and work done in connection with *tuberculosis*. This portion being exclusively treated shows that 5,394 were examined and tested with tuberculin with a result of 905 were found diseased *Glanders*, holds an important percentage, 230 animals were reported suspected and on inspection 160 were condemned and destroyed.

MAINE.—Gives a daily report of the work done by the State Veterinarian and concludes:

"A summary of the whole number of stables and herds of cattle inspected by our commission in 1894 will be found to be two hundred and one, as opposed to one hundred and forty-three in 1893, an excess of forty-eight cases. Ninety-two herds of cattle were inspected, while the number of stables of horses examined for glanders and farcy was one hundred and eight, which exceeded the number of last year by forty-six and there

is a very apparent cause for these latter inspections which will be given later in the report.

Forty-six head of cattle were condemned and destroyed at an appraisal of \$1,485.50, and sixty-four horses were also condemned and destroyed at an appraisal of \$2,692.50, the total amount of appraisals for the year being \$4,178."

COLORADO.—Where the following interesting list from State Veterinarian, Chas. Gresswell is found.

Horses—

Glanders and farcy	12	7
Reported as suspected glanders or farcy—		
Nasal gleet	15	12
Chronic Lymphangitis	8	4
Chronic catarrh	7	2
Chronic erysipelas	23	2
Venereal diseases	5	3
Acute blood poisoning	2	2
Epizootic influenza, scarlet fever and purpura	180	72
Laryngitis	2	1
Cerebro-spinal meningitis	1	25
Mange, Texas itch, etc., ...	43	6
Spasmodic glottidis	7	10
Poisonous grasses or herbs	57	6
Totals	362	152

Cattle—

Actinomycosis	5	1
Anthrax	50	71
Cancer	1	3
Influenza and catarrh	...	28
Chronic laryngitis	2	4
Parasitic diseases	25	5
Tuberculosis	4	...
Poisons	26	13
Totals	113	125

Sheep—

	1893.	1894.
Scab	In 13 counties.	In 18 counties.

Swine—

Swine plague	In 4 counties.	In 11 counties.
	Estimated loss	Estimated loss
	1,000 head.	5,000 head.

The above list includes the number of cases reported, the majority of which were personally investigated.

SOCIETY MEETINGS.

GERMAN VETERINARY MEDICAL ASSOCIATION,
FOR NEW YORK AND VICINITY.

The eighth annual General Meeting was held last Tuesday evening, April 15, 1895, at Dr. Sattler's Hospital, 112 Boyd St., Newark.

The meeting was called to order by the President, Dr. L. R. Sattler, Newark, upon roll call the following gentlemen responded to their names viz., Drs. Turner, Ogden, Amker, Wallace, Simman, Leissen, Leisgun, Serling.

The minutes of the previous meeting were read and approved. Several communications from absent members were read by the Secretary expressing regrets for being unable to attend the meeting. Then the Secretary's report was read, which showed the association to be in a flourishing condition numerically and the roll call showed a large increase. Three years ago, as this society was re-organized, I was chosen as your Secretary, and you have seen fit at every election of officers since to honor me with a re-election; a trust that I have not only felt honored and pleased with, but one that I have faithfully and earnestly tried to fulfill. As every proceeding report I have had encouraging and gratifying results of the conditions of the association to submit for your consideration; the record of the past year is no exception, and I am sure you will not contradict me when I say that veterinary science is making such rapid and successful strides forward that our society ranks on an equal with any veterinary organization in the state. This success is not only in increased numbers of members, and good financial standing, but is the interest, that nearly all veterinarians, and the press, and the public have shown in our monthly meetings. This is largely due to the individual members who have always taken an active part, always ready to respond to any appeal for aid to support and help along the good workings of this society. We are no longer an experiment or a theory but a practical success and I am positive that not a single member of our society to-day

will say that he has not received some benefit from the pleasant and interesting meetings of this Association. During the past year our monthly meetings have been successful and well attended. Interesting papers were read and were well received, and no doubt brought forth good fruit.

At our Monthly meeting 13th Nov., 1894, we were honored by the presence of our honorary member Prof. Dr. Liautard, who by his vast experience rendered us great and valuable aid in our important work. At that meeting he read a paper: Experimental researches upon the use of Malleine. Before closing this report I would state we have sustained a sad loss during the past year in the death of Drs. A. Kuntz, and Dr. Robert Leis. Both were very zealous active members of the profession and Dr. Kuntz was the founder and the moving genius of this organization. In closing I wish to thank most sincerely the Veterinary Review and the Journal of Comparative Medicine for their very generous act of kindness to the Society, and also to thank the members individually and the officers for their kind assistance and consideration, and for their kind attention to the present reports.

Dr. Turner moved that the report should be accepted and placed on file. Seconded by Dr. Ogden. Carried.

Then the report read by the Treasurer showed the Association to be in rather straightened condition financially.

Dr. Krause was proposed as a member of the Association and the Board of Censors will report on his application.

Then the nomination and election of the officers took place and the following officers were re-elected unanimously: Pres. Dr. Sattler Newark, Vice Pres. Dr. R. Leis. New Sec. Dr. H. Weelner, N. Y., Treas., Dr. Turner, N. Y., Bibliothek, Dr. O. Leis, Newark. Board of Censors: Drs. Serling, Amker, Ogden.

Then Dr. Sattler performed under assistance of the present colleagues an interesting operation on a three year old dog (bitch bull terrier) the sectio caesara. Five puppies were developed, three dead and 2 alive. The latter were put in an incubator

on the advice of Dr. Serling, and were able after 3 hours to take the bottle. The owner of the dog was highly pleased and gave his heartiest thanks to the operator and society. After a prolonged and interesting discussion by the members, the meeting was finally adjourned. The next meeting will be held on May 16th, at Meyers Hotel, Hoboken.

H. WELLNER, D. V. S., Secretary.

PENNSYLVANIA STATE VETERINARY MEDICAL ASSOCIATION.

The Pennsylvania State Veterinary Medical Association held its annual meeting at the College of Physicians on March 5th, 1895, President Leonard Pearson in the Chair. A large number of members answered the roll call.

The minutes of the last meeting being read and approved, the President read his annual address, which was followed by nominations for officers and resulted in a vote by ballot as follows: President, Leonard Pearson; First Vice-President, W. H. Ridge; Second Vice-President, Thos. B. Raynor; Third Vice-President, Horace P. Keely; Treasurer, J. R. Hart; Recording Secretary, W. G. Bermer; Corresponding Secretary, F. S. Allen; Censors, Drs. Hoskins, Harger, J. Raynor, McNeil and Jimberman.

The examination by the Board of Censors for the application to membership resulted in the recommendation of Dr. Wentz, Bland, Kellner, Vandegrift, McClellan, Thompson and Willary.

In the afternoon session of this first day the Secretary and the Treasurer presented their reports, which were accepted and ordered on record.

The report of the Committee on Legislation was presented by Chairman Dr. W. H. Hoskins.

Dr. Allen offered the following resolutions:

WHEREAS, Since the office of State Veterinarian has recently been established by the Legislature, largely through the efforts of this Association, and

WHEREAS, It is to the interest of the public and the Veterinary profession that this new office should be filled by a competent man, be it

Resolved, That a committee of seven be appointed, whose duty it shall be to

determine who is best qualified to fill the position, to endorse this candidate and use the influence of this association to favor his appointment, and be it further

Resolved, That the above-mentioned committee shall consist of Dr. W. H. Hoskins, W. L. Zuill, T. B. Raynor, John R. Hart, J. C. McNeil, J. W. Salade and M. E. Conard.

Which was made as a motion and carried by a rising vote, 10 to 5.

The Chairman of the sub-committee, Prof. Harger, reported progress.

On account of changes made in the program Dr. J. Raynor was called upon to read his paper on *Rupture of the Stomach*.

The case was a heavy draught horse, who had not suffered from disease previous to this attack. His attention was called about 10 A. M., when he found patient standing quiet in a stall—drooping head, inappetence, feeble pulse and great weakness.

Upon closer examination—diagnosed paralysis of bowels.

Prescribed flax seed oil drenches and tepid soap water injections.

Horse suffered no pain, apparently, laid down naturally. No signs of vomition—dropped dead at 4 P. M. Post-mortem Rupture of Stomach.

Dr. Leonard reported cases of Aconite poisoning by the careless administration of tr. aconite by an employe, because the owner heard that tr. aconite was good for horses.

Had all the symptoms of acute poisoning, prescribed Amon. Carb., Digitalis and Whiskey, and Nitro-Glycerine Hypodermatically.

The case recovered entirely in about four days. Dr. Hoskins witnessed as many as 30 or 40 deaths from over-dosing with tr. aconite in the West Philadelphia horse marts.

He sees less of it now than formerly, as people recognize the value of veterinary assistance.

Dr. Hoskins asked whether the members present would give all the water a horse wanted while suffering from acute pleurisy.

Discussed by Drs. Lintz, Schreiber, Conrow, Goentner, Ridge, Bridge, Lusson, Noack, Kooker.

The concensus of opinion was that the sufferer should have all the water he wanted, small quantities frequently repeated.

Dr. Hoskins by experiment found that the quantity of water offered had a great controlling influence upon the tendency to effusion, and believes in giving very little water.

It was generally conceded that it was extremely difficult to treat it successfully and the cases that did recover were worthless.

Dr. Lusson reported cases of Azoturia.

Dr. Jelton a case of Probable Influence with Œdema Glottis—tracheotomy—complete recovery.

Adjourned to meet next day at 10 A. M.

PHILADELPHIA, March 6, 1895.

The second day's session of the Pennsylvania State Veterinary Medical Association was called to order by President Pearson.

Prof. Harger presented then a valuable paper on Springhalt and his treatment, which was followed by an interesting discussion and report of cases by Dr. J. Raynor.

Prof. Zuill read a long and interesting paper on "Penetrating Street Nails," in which, after considering the varieties of injuries, he spoke of the treatment, calling attention to the use of Peroxyde of Hydrogen, dressing with iodoform. He generally condemns the use of poultices, but places great dependence on antiseptics.

The paper brought on a lively discussion, where most of the members took part.

Dr. Sallinger read a paper on Pneumonia, * which brought out the different opinions of most of the members present.

After some private business carried by the Executive Committee, the meeting returned to its labors by the discussion of Tuberculosis. Dr. A. E. Conrow, Ridge, J. S. Raynor, Hoskins,

* See this issue.

Kock, Zuill, Harger, took an active part in the discussion and brought on very interesting views on the subject. After voting that the next meeting shall be held in Pittsburg the Association adjourned.

KEYSTONE VETERINARY MEDICAL ASSOCIATION.

The monthly meeting of the K. V. M. A. was held at the home of Dr. W. S. Kooker, No. 662 W. 11th St., Philadelphia, Tuesday evening, April 9th. After enjoying some fine music the meeting was called to order by Dr. Eves as President Lintz was not present.

The subject of Cerebro Spinal Meningites brought forth quite an animated discussion, also some reminiscences very pleasant and otherwise to the practitioner most deeply interested at the time.

A case was cited of a driving mare, taking this disease and dying in four days after being hitched near an infected stable not longer than half an hour.

A case was also cited of Broodmare with foal at foot, which had not been out of upland pasture, and apparently very healthy location, for two months. She died within two days after showing symptoms of disease.

The Legislation of the past year was sifted and thoroughly discussed. The bill compelling all institutions receiving State aid to buy only meats killed within the State, also the bill compelling all meats shipped into the State to undergo a veterinarian's examination were both unanimously condemned as they were not in the interest of the people.

After a very interesting and highly instructive meeting the Society adjourned to meet at the office of Dr. W. H. Hoskins, May 14th.

Those fortunate enough to be present hoping Brother Kooker's future years may be as pleasant and instructive as the entertainment given them.

W. L. RHOADS, D.V.S., Sec.

SUNDRIES AND ITEMS.

BOVINE TUBERCULOSIS.—The Governor of New Hampshire has vetoed the bill recently passed by the Legislature of that State appropriating \$100,000, for the suppression of bovine tuberculosis. Farmers' vote!

CAUTION.—Cases of glanders attributed to the use of impure equine serum are already noted. A recent writer states, moreover, that "although strenuously denied, it is now well ascertained that several of the horses from which antitoxin was obtained by Aronson were suffering from glanders."

Whether the above assertions are true or false, it certainly would be well for the medical profession at large to refresh themselves concerning the treatment of this usually fatal veterinary disease; also to scrutinize the product employed. (Medical Age).

DYPHTHERIA ANTITOXINE SERUM.

AT a meeting of the Paris Hospital Medical Society held on March 29th, according to the *Medical Week*, Dr. Variot referred to the fact that injections of antidiphtheritis serum in doses of from five to ten cubic centimetres caused a rise of temperature of from 2.25° to 4.5° F. He said this rise was undoubtedly due to some "hyperthermizing substance" contained in the serum, and the problem before us was to isolate from the serum this principle that might become a source of danger. Dr. Le Gendre confirmed this experience. Prof. Hayem referred to his former experiments and said: "Antidiphtheritic serum obtained from a horse is necessarily toxic to man." This toxicity, he said, was due to albuminoid substances in which heat produced isomeric changes resulting in destruction of their noxious properties. Dr. Gougenheim, while approving of the administration of antitoxine serum, said that it was entirely without effect, even in very large doses, in cases of hypertoxic diphtheria. Dr. Sevestre stated that

he had injected ordinary horse serum into four children suffering from non-diphtheritic sore throat, and that the injections had produced slight febrile reaction and within a few days eruptions similar to those observed after injections of serum from an "immunized" animal. The latter, therefore, and not antitoxine itself, caused the untoward symptoms that followed the use of antitoxine serum. (N. Y. Medical Journal).

ANTISTREPTOCOCCOUS SERUM.

THE *Semaine medicole* states that Dr. Roger, Dr. Charrin, and Dr. Marmorek reported at a meeting of the Paris Biological Society held on March 30th, that they had employed antistreptococcus serum in the treatment of cases of erysipelas and puerperal septicæmia. Dr. Marmorek had administered an initial dose of ten cubic centimetres of serum, derived from horses or asses which had been rendered insusceptible by the inoculation of a very virulent culture of the streptococcus, to forty-six patients suffering from erysipelas, all of whom had recovered. Dr. Roger and Dr. Charrin had treated two cases of puerperal septicæmia, one case of erysipelas in a three-weeks'-old infant, and one case of pseudo-membranous angina with this serum, and the patients had recovered without complications. (Ibid).

TWO EASY AND DELICATE TESTS FOR ALBUMIN IN URINE.—Dr. C. Fouchlos (*Progress Medical*) recommends two new tests for albumin in urine, for which he claims utmost delicacy and absence of any possible fallacy :

1. Add to the suspected urine a few drops of a one per cent solution of corrosive sublimate ; in case of turbidity, add some drops of acetic acid. If the turbidity persists it is due to the presence of albumin.

2. Take 100 cc. of a ten per cent solution of sulphocyanide of potassium, and mix with it 20 cc. of acetic acid. Add a few drops of this mixture to the urine. If albumin is present in

small quantities, an immediate turbidity will ensue; if in larger quantities, a heavy white precipitate will appear.—*Med. and Surg. Rep.*

TO EXTERMINATE TUBERCULOSIS, the following plan is recommended by Dr. Law: Have a veterinary chief for each county or section where cattle are kept in large numbers. This chief should have entire charge, keep complete records, inspect all animals killed and if any die of a contagious disease test the herd the animal came from and then destroy every animal affected with a contagious disease and purify the premises. By this plan all public excitement would be avoided and the expense would be much less than to start in and make a housecleaning as is being done in Massachusetts. This plan being carefully carried out, there would be an object for the owners to dispose of their diseased animals by pointing out those supposed to be diseased.—*American Agriculturist.*

BIBLIOGRAPHY.

Police Sanitaire des Animaux—(Sanitary Medicine of Animals) by A. Conte, of the Toulouse School, 6th volume of the Cadeac Encyclopedia—J. B. Bailliere fils, rue Hautefeuille, Paris.

This volume continues the brilliant series of its predecessors.

Beginning with the introduction of the history of Sanitary legislation in France, it is followed by 4 parts—the first, where are considered the various modes of police interference, and general measures to be applied in cases of contagious diseases, such as inspection of fairs and markets, slaughter houses, means of transport, disinfection, etc. In the second, the special measures to be applied in each respective disease with consideration of the sanitary police in France, on the frontier and the special service in Algeria. In the third we are initiated

into the sanitary measures concerning horses in the army, the administration of the breeding establishments, and of the animals kept in the veterinary schools. In the last the subject of foreign sanitary legislation is considered.

Les Tuberculozes Animales. (Animal tuberculosis.) By Prof. Ed. Nocard,—G. Mojon. Paris.

A nice volume of some 200 pages, where the author has gathered the history, with symptoms, lesions, etc., of tuberculosis in the domestic animals. Beginning by a short introduction upon the general subject of tuberculosis and following it by some remarks on the species of animals which are subject to it, a careful but concise consideration is made of it as it manifests itself in bovines, swine, equine, small ruminants, carnivorous and birds, with a review of the whole history of the disease including the sanitary measures and prophylaxy pertaining to it, with indications as to the use of the products of the diseased animals.

The volume is one of the series of the scientific encyclopedia published under the direction of Mr. Leanté member of the Institute of Paris.

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OBITUARY.

Professor Jacob Meyer, Director of the Veterinary School of Zurich, Switzerland, died on the 8th of May last from sequelæ of influenza, in the 64th year of his age.

AMERICAN VETERINARY REVIEW,

JULY, 1895.

NOTICE.—Please address all communications regarding matter for publication, books for review, exchanges, etc., to the Editor, 139 and 141 W. 54th St., New York.

EDITORIAL.

IMPORTANT NOTICE.—This is the fourth number of our 19th volume. In the preceding we have called the attention of our friends to the numerous difficulties that we had to meet when we undertook to save the REVIEW from stopping her issue. Great as those difficulties were, we nevertheless entered the field again, depending on the help of the veterinarians of America. We made promises, and we believe that we have kept them. Our issues have been what they were in the past. We have spared nothing, neither labor nor expense. Shall we continue? It is for those to whom the REVIEW has been sent to answer. We do not intend to make this journal a source of income, but we cannot keep it if it is a continuous source of loss. We look now for the subscriptions, and we trust they will be sent to us. If we are not supported, we shall stop here. *A bon entendeur, Salut.*

VETERINARY DEONTOLOGY.—We have received of late a number of letters relating to the means which ought to be employed to elevate the veterinary profession, some of them

containing numerous complaints made by veterinarians against members of their own profession. For some it is the cutting of rates of fee, for another the manœuvres used to obtain patrons, for this one the intimate familiarity which is commonly observed between veterinarians and the employees of horse owners, and what not. It is certain that all the subjects complained of deserve attention, and ought to be remedied. But how can it be done? There are so many excuses which would be presented by those who are guilty of unprofessional doings. These are found almost everywhere. We are not worse than other nations, and we are pretty certain that what is done in America, where the profession is young, is done in Europe, where it is old. And yet it is not proper. We have already alluded to this subject in various connections, and we must now, in answer to our correspondents of to-day, repeat what we have already said: ignorance of the obligations of professional conduct cannot be wiped out until intended professional men are educated as to what their duties will be when once in the profession. Good examples set by some will do good, it is true, but before these can be followed, how many temptations to do wrong will be offered. We do not know of any mode of remedying that state of affairs but to urge our veterinary colleges to establish a course of deontology in their curriculum as one of the important factors in their improvement of veterinary education.

VETERINARY MEAT INSPECTION.—In previous issues we have offered our readers letters relating to the subject of sanitary or meat inspection by veterinarians in this country, and have laid before them in one of our last numbers a long article on the subject from the pen of our chief of Bureau of Animal Industry, Dr. D. E. Salmon.

Without entering into the consideration of the letters which we have published, but always watchful of what good efforts might be made in that direction, we have read in that excellent paper, the *Breeder's Gazette*, the following article, which shows, after all, that if we are not yet perfect, we are working to attain

that degree. Such inspection as is going to be carried on in the Stock Yards at Chicago cannot but do a great deal of good and the fact that a goodly number of veterinarians are to be employed speaks certainly well for the measure :

" It is interesting to note that the Department of Agriculture is now endeavoring to perfect the inspection service at the Chicago Yards instead of seeking ways and means to cripple it.

" There are to be twenty inspectors stationed at as many scale houses, and four veterinarians will patrol the Yards, and pass upon the work of the inspectors. The inspection so far by the State authorities has been chiefly aimed at animals affected with contagious or infectious diseases. The work of the Federal inspectors will be chiefly with the object of detaining all animals that from any cause or condition would be unfit for food. Dr. Melvin states that 'common sense' is to be exercised, and that if country shippers will use proper discretion in handling only animals that are fit for food they will be able to avoid trouble.

" Cattle, hogs and sheep will be 'held up' on account of advanced pregnancy. Cows within a month of parturition, and for ten days after, will be subject to condemnation, also sheep and hogs three weeks before and ten days after. All animals with bed sores, abscesses, bruises, etc., serious enough to affect the wholesomeness of the flesh, will be thrown out. Cholera pigs, badly bruised hogs or those with bad bunches on them may get their owners into trouble. Scabby sheep that are emaciated and in bad condition will be thrown out. 'Bob' or 'deacon' calves will be condemned. Skinny racks of cows and feeble animals of all kinds will be detained. In short, anything not fit for consumption as human food will be more rigorously condemned than heretofore. Thorough work is promised.

" Shippers will do well to note these facts."

HIGHER VETERINARY EDUCATION.—Are those words of any value in the mouth of some of our colleagues, or are they merely farcical, without meanings. We have heard in our meetings partisans of two-year schools say that they believed in higher

veterinary education. We have read them defending their standing in our journals. But what must be thought of their beautiful theories when we see what is taking place in the schools where they are teachers. In the report of the commencement exercises of one of the Washington schools appeared the name of a gentleman who received his degree from that school.

This college is a two-year institution, its arrangement implies at least one year of studies within its walls. How is it then that the person above alluded to, graduated from it after an attendance of a few weeks only, having entered the school about Christmas vacation, and then graduating the following March.

Is this a two-year school curriculum? Is this the meaning of a higher education? Will this Washington school explain? No doubt that is a matter of investigation for all, and especially for the National Association.

ORIGINAL ARTICLES.

REMARKS ON SOUTHERN CATTLE FEVER.

BY W. H. HARBAUGH, V. S.

(Read before the Virginia State Veterinary Medical Association, Charlottesville, Va.,
January 3, 1895.)

(Continued from page 147.)

I have perfect faith in the Bureau's discovery of the protozoal micro-organisms in the red blood corpuscles, because it thoroughly explains every phenomenon of the disease, as well as the post mortem lesions. But from whence comes the micro-organism? From the South certainly, but how does it gain access to the blood of cattle? Does the tick get it from the infected cattle, or do the cattle get it from the tick? That the

tick is not a necessary bearer of the micro-parasite is proved by the Bureau's experiments of transmitting the disease by the transference of blood direct from a Southern to a Northern cow. We are told that the disease is spread by the young ticks. The old tick drops off the Southern cow, lays its eggs, the eggs are hatched, and the young ticks crawl on susceptible cattle and cause the disease. Where do these young ticks get the protozoa? Again we are told "the young ticks, as they are hatched near the dead body of the female, may become infected from this." But this idea is negative by the fact that they produced the disease with the young ticks artificially hatched. Another strange result of its experiments is noted as follows: "The crushed ticks introduced into the blood, fail to produce any infection whatever, while ticks from the same lots when placed on the skin, produce Texas fever."

The biological part of this subject must be left to the skilled specialist in the field who, with his perfectly equipped laboratory, may in time, settle some if not all of the doubtful points. But I suggest that the proper course for us to pursue is to consider ourselves a committee of observation, and that it be the duty of each member to carefully note every particular in each case treated, including a history of the animal as detailed as it is possible to obtain, and report the same in proper form, so that the recorded observations may be compiled into a paper to be read before the association next fall or winter.

During the coming season I hope to be able to settle some of the doubtful points we meet with in practice, and with the assistance of Prof. Niles and Prof. Hoge, I see no reason why we should not conduct some profitable experiments. Surely no association is better situated to study the disease.

But little attention has been paid to the medical treatment of the disease, which to us, as practitioners, is of the greatest immediate importance. The investigators have devoted their time to the cause and nature of it.

In the winter of 1886 and 1887 I was in the vicinity of Albemarle Sound, in North Carolina, getting information about

a horse disease for the Bureau. Naturally, I conversed with a number of physicians of that section, and was informed by them of a serious and frequently fatal type of malaria in the human being, they had to contend with, called by them hemorrhagic malarial fever. I was struck with the similarity of the symptoms to those of Southern cattle fever. In fact, I know of no two diseases of man and the lower animals so much alike as these two. I wrote the particulars to a veterinarian who was an authority on Southern cattle fever, but he attached no importance to the similarity of the symptoms, considering them merely co-incidental. However, I determined to go deeper into the subject, and consequently I devoted much of my spare time to reading up the diseases. The more I read, the more I became convinced that one who learns much by reading has much to unlearn when he arrives to the naked truth. Of one thing I became convinced, however, and that was that Southern cattle fever was either a malarial affection or closely related to that class of disease.

During the discussion of this subject I will call your attention to the symptoms, post mortem lesions, history, etc., of hemorrhagic malarial fever as compared with Southern cattle fever, so that you will comprehend the grounds on which I based my opinion. You must remember that the protozoa—the micro-parasite—had not been discovered in the red blood corpuscles of cattle affected with Texas fever at the time of which I speak, and when the discovery was announced, some years later, it only confirmed me in my opinion as to the nature of the disease.

I must mention that many of the physicians who have experience with hemorrhagic malarial fever, considered it a new disease; one of them told me he treated the first case that ever appeared in that section in 1866. But another physician claimed that it was not a new disease, and to prove it, he referred to some records in a quaker meeting house in Perquimans Co., N. C., as evidence that there were cases of it in that county at least fifty years before 1866. He said that while it was called yellow

fever in these records, there could be no doubt that it was hemorrhagic malarial fever, as the history of the case gave ample evidence. It should be remarked that down there "yellow chills" is a common name for the affection even at this date.

While there I learned that the majority of the physicians with whom I conversed on the subject depended on calomel and quinine as their remedial agents, and I determined to apply the same treatment, as far as applicable, to Southern cattle fever in the future.

During the following seasons my success was not what I had expected, but still I was not entirely discouraged as I knew the mortality in the human disease often exceeded twenty-five per cent. I concluded that I was giving quinine in too small doses; consequently, I laid in a supply of quinine at wholesale prices, and gave it in wholesale doses, and my success became more marked, and now, after years of trial, I am satisfied that quinine is the proper antidote when properly administered and when given to the animal before dissolution has set in.

Although we are called to treat many hopeless cases of the disease, it by no means follows that all acute cases are hopeless. In many instances, we are not called to treat ordinary sporadic diseases till they are both helpless and hopeless.

The progress of the disease is so rapid that the case is often hopeless when the animal is discovered to be ill, but fortunately, all acute cases do not become hopeless so rapidly.

I will simply outline my course of treatment in this communication, as I will go fully into the details of it in the discussion which will follow.

I first secure a comfortable stall with desirable surroundings (I never leave an affected animal on pasture if it is to be treated). I then administer a maximum dose of calomel, and in some cases combine other purgatives with it. I then prescribe extra large doses of sulphate of quinine, every three or four hours, till there is a marked fall in the temperature, or (if the animal is where I cannot see it frequently to take the temperature) until the urine becomes markedly more natural in color. I then

continue the quinine but increase the intervals between the doses, as the temperature falls, and the urine becomes natural in color.

I allow the animal all the cold drinking water desired, and feed bran and meal slops if the animal will eat them, but no harm follows the practice of allowing all the cured food the patient will eat. Some will nibble at hay, others blade fodder, and some will refuse all food. Such patients I drench with raw eggs and fresh milk, and sometimes with oatmeal gruel.

When the temperature has been reduced to 103° F., or lower, or when the urine is about natural in color, I stop the quinine, and give a compound of arsenious acid, sulphate of iron and nuxvomica twice a day, and continue it so long as the cow remains debilitated or in bad condition.

In some cases, you will have relapses, when you will have to resort to quinine again. Some cases recover rapidly and permanently, while some few cases only partially recover, linger for a month or two and die, apparently from malnutrition, even weeks after severe frosts. This latter termination is especially marked in cases that owners will persist in turning on pastures after the urgent symptoms have disappeared. Therefore, I advise that all recovered cases be kept off pasture till after cold weather has set in.

In recent years, I look for ticks as a matter of curiosity. Sometimes I find them on patients, and sometimes I fail to find them, but I make no systematic search for them.

Such is an outline of my course of treatment, which, of course, is often modified when deemed necessary.

In the case of a human being with a serious disease there are premonitory symptoms which necessitate the calling of a physician before the alarming symptoms have appeared, but in the case of a cow, the alarming symptoms have appeared, and the disease has made a terrible onslaught on the vital organs before she is discovered to be ill; then we are called, and with these facts in mind I have been comparatively satisfied with my average success.

When you have the disease break out in a herd, one or two acute cases cause the alarm. If you will have all the cattle placed in the stable, so that you can take their temperatures, you will often discover quite a percentage of them to be affected, showing no other symptoms than an abnormal rise in the temperature. Hence the necessity of this procedure.

I will cite two instances which occurred in my practice during the past season, as examples covering many of the points referred to in the foregoing pages.

On July 16th, last, I was called to see a case below the city. This cow was one that was born and raised on Col. A.'s place (Chesterfield, before referred to. Her temperature was 107° F., and her urine dark in color. I prescribed the usual remedies and she made a good recovery in about two weeks. On August 10th, I was called to see her again and found her suffering from an ordinary attack of laryngitis, from which she recovered in a few days. On August 28th, I passed the farm and saw her grazing along the road; she was in good condition and was giving a fair quantity of milk. On October 8th and 15th, I was called to prescribe for her for an obstinate diarrhœa. At this time there were no symptoms of Southern cattle fever, her symptoms were characteristic of tuberculosis. She died some weeks later, the exact date I was not informed, and consequently I had no opportunity of holding a post-mortem examination.

When I was first called to this cow I looked her over, but found no ticks. I asked the stableman if he had seen any on her. He said that he had removed a few very large ones a few days before.

On September 19th, I was called to the farm of Mr. F., in Chesterfield County. I found three fine Jersey cows affected with Southern cattle fever. Two were down, their urine was almost black, the temperature of both was 108° F. The other was standing, urine slightly tinged with coloring matter of the blood, temperature 104° F. I discovered no ticks on them. The mild case and one of the acute cases recovered, the other

died within twenty-four hours. It was the youngest cow that had the mild case.

All of these cows were born and raised on the farm of Mr. Grant, whose letter I have read to you. They were purchased by Mr. F. and taken to his place early in the spring, and did well until attacked by this fever in the latter half of September.

There is one very important point on which I have not been able to arrive at any conclusion whatever, and that is whether or not an infected farm may in course of time become a non-infected farm.

We know that Mr. Grant's farm has ever been a non-infected farm, although his cattle have ticks on them, and I know of farms where the disease occurs year after year when new cattle are placed on them, and the question that occurs to my mind is: If all cattle are kept off such a place for a certain number of years, would that place become a safe place for cattle raised on non-infected farms, or cattle from without the so-called infected area?

At present I see no hope of success for preventive inoculation, although several experimenters thought they have reached that point.

Natural immunity is acquired by cattle born and raised on an infected farm. If I intended to embark in the raising of valuable cattle, I would begin with cattle raised on an infected farm, and would buy an infected farm, and I would introduce more cattle from infected farms to keep my supply of infection, as it were, and I would be certain that my place was an infected place by placing on its pastures yearly, one or more cheap cows from non-infected places as a test. Hence my breed of cattle would be insusceptible and healthy so far as this disease is concerned, and I would run no risk of such heavy losses as incurred by Col. A. These cattle would be safe to go to any infected farm in the South, and cattle of known immunity are needed, but of course they would carry destruction to non-infected places North or South of the line in the fever season.

ANTISEPTIC SURGERY.

BY H. A. SPENCER, V. S.

MR. PRESIDENT AND GENTLEMEN : For several years I have been deeply interested in trying to fathom the mystery of the most humane and expeditious method of treating surgical and accidental wounds. A number of years ago our journals fairly teemed with the successful results of antiseptic surgery, but the technique was either too poorly described, or rendered unavailing by the demands for extensive and expensive paraphernalia that after many crude attempts, abandoned it, with the firm conviction that it had its origin in the vagaries of some visionary theorists, and was entirely impracticable in ordinary practice; therefore, I would be content to follow the time-honored custom of our fathers, and welcome the appearance of *laudable pus*.

But a friendly intercourse with a number of medical gentlemen, who were firm adherents to modern surgery, finally led to numerous invitations, which were eagerly accepted, to attend surgical operations where the antiseptic and aseptic methods were employed in the most minute details; and, gentlemen, the revelation was made plain to me that my former attempts had been not anti, but, candidly, proseptic surgery.

That the study of bacteriology has been productive of some of the most startling discoveries as to the cause of disease is readily conceded by all students of medicine. Among the most brilliant results of these investigations there have been more gratifying to the progressive practitioner than the perfecting of a methodical and scientific manner of conducting surgical operations with a view to complete sepsis.

We are accustomed to hear operators who have gleaned some theoretical knowledge of bacteriology from the casual perusal of our literature, or from the lectures of their college pro-

fessors, discourse learnedly on the dangers of wound infection and the various methods to prevent such disaster ; but when we witness their attempts we find them fully as consistent and abortive as the crude attempts that I made in the same line in my early efforts to emulate the successes of those scientists, who related their providential achievements in the columns of the journals, but forgot the importance of giving their readers a lucid description of the details that blended inseparably with the *Modus Operandi*.

It is patent that a surgeon who would wear the laurels of a successful operator in modern surgery should have a keen conception of the relative meaning of the terms sepsis, asepsis and antisepsis, and a fixed determination to use the knowledge in its strictest sense in his surgical practice, for the omission of a single detail, however minute, in the performance of an aseptic or antiseptic operation will, in the majority of instances, be the means of introducing infectious material into the wound. It is to be also remembered that the sins of commission are frequently as fertile a productive of evil as that of omission; therefore, he must not depart from the minutiae of the rules laid down for his guidance.

Aseptic is a word derived from the Greek, and is defined as "not liable to putrefaction"; but surgically it means something more than this, as our hands, apparel, and instruments are not liable to putrefaction, or at least are only remotely so, while, unless they have been sterilized and are kept sterile, they are not aseptic, but are mediums whereby we may convey the most disastrous infections to the wound. Therefore, by aseptic we mean to bring about a condition in which there is complete absence of infectious or septic material, or in other words excluding from the seat of operation, and from our hands and those of our assistants, from our instruments, sponges, dressings, or any material we may select to use in our operations, all micro-organisms of a pathogenic nature.

And, though we may have observed with scrupulous care all the details for complete asepsis, still it is very likely that fresh

wounds may contain organisms that are either numerically too few or are non-virulent, and hence do not give rise to infection. Indeed, no method has yet been discovered by which the skin can be rendered absolutely sterile, and there are micro-organisms in cutaneous glands that the most thorough disinfecting fails to remove, and these in a suitable soil are capable of producing inflammation and suppuration; therefore, it is patent that we should be as thorough as possible, for, if these bacteria should be of a virulent character, and the patient of an anæmic nature, the tissues, fluids and cells would not exercise that germicide power they are ordinarily endowed with, and infection would undoubtedly occur. In short, if we have not had at least an elementary training in bacteriology, we should unswervingly follow the detailed instructions of those whose researches in that field of science have made them proficient tutors to guide and direct us.

To those who thoroughly understand the phenomena that produce suppuration in wounds and general septic conditions, they are not a source of wonderment. To them it is only remarkable that these conditions do not exist more frequently. Hence, I say, that no matter how sound an anatomist, nor how skilfull an operator you may be, unless you practice in detail the rules of asepsis, when it is possible—which unfortunately for us of the veterinary persuasion is not as frequent as we would wish—you will fall out of the procession of advancement that modern surgery is making.

The terms sepsis and septic, as has been indicated, includes all, or nearly all, the general or local surgical infections caused by bacterial invasion. The chemical products of bacteria are more the cause of the disorder than they are themselves; several varieties of micro-organisms when they gain entrance to the general circulation multiply, and then a general blood infection is the result, which frequently proves fatal. With or without extensive multiplication of micro-organisms in the blood the system may be overwhelmed with bacterial poisons. This condition is known as acute septicæmia. Localization of pyogenic

bacteria in the organs, especially when they have been transported by emboli, give rise to multiple abscesses, and is called pyæmia, and when both conditions coexist it is called septicpyæmia.

Under the head of local infections are grouped together all those accidents which befall wounds, suppuration, traumatic fever, hospital gangrene, wound diphtheria and erysipelas.

Antisepsis.—In the employment of antisepsis we use the best means that can be devised for destroying the bacteria that exist both in the wound and on the implements that shall come in contact with a wound, and here it is proper to state that the terms antiseptic and disinfectant should not be confounded. The latter relates to those agents which destroy pathogenic or putrefactive organisms and are germicides, while antiseptics only arrest putrefaction and fermentation, but do not necessarily kill the micro-organisms. A deodorizer does away with stench, but may not have either antiseptic or disinfectant properties.

While bacteriologists have shown us that infection rarely takes place from the air, they have also demonstrated that it is most frequently brought about by contact, thus we are enabled to understand the importance of preventing the introduction of bacteria on instruments or the hands of the operator and assistants.

The association of laboratory with operative clinical experience should continue, and we cannot forget advising the expediency of the surgeon and bacteriologist laboring together in a field that promises so much for the instruction of both, when the results of their investigations are brought into comparison.

But our enthusiasm for aseptic methods should not allow us to lose sight of the necessity of perfect mechanical modes of procedure. In the matter of technique, aseptic operations call for no inconsiderable preparation. First, the operating table should be sheltered and occupy a reasonably clean room, all instruments should be subjected to a thorough cleansing and be placed in boiling sterilized water, after which they should be distributed in convenient trays or shallow pans which should

contain a sufficient amount of carbolized hot water to keep them submerged. Several gallons of sterilized water should be placed in a large fountain syringe, preferably made of metal, to admit of its sterilization. A quantity of towels and enough loose smocks or aprons for the operator and his assistants should be prepared by boiling in a solution of 1 to 1000 of bichloride of mercury and afterwards dried and subjected to a heat of 212 degrees in an oven, when they may be carefully wrapped up until needed ; sponges should be made, not purchased. They may be made by taking pieces of antiseptic gauze and placing wads of antiseptic cotton in their center and tying them together, thus forming a very cheap and convenient absorbent. There should be an abundance of these and after having been subjected to heat of the oven they should be packed away in sterilized, wide-mouthed fruit jars.

A large piece of rubber or oil cloth should be sterilized to be used between the field of operation and the table. The patient should be prepared for the operation by an assistant, who should see that the parts immediately adjacent to the seat of operation is shaved and thoroughly scrubbed ; first, with clean hot water, soap and brush, and then thoroughly rinsed by some antiseptic fluid from the fountain syringe, after which this part must be left untouched except with sterilized hands. The patient may now be placed upon the table and anæsthetized while the operator and his assistants are preparing their hands. This should be done in the following manner : First, a thorough scrubbing with hot water and soap, then a rinse in a carbolic solution, then in a strong solution of permanganate of potash, then in a solution of oxalic acid, and a final douche from the fountain syringe, after which they may be dried by wiping them on one of the sterilized towels.

From then on those concerned must be impressed with the fact that they are to touch absolutely nothing that is unsterilized, wiping off perspiration, blowing the nose, scratching the face or putting hands in the pockets must be strictly forbidden.

The assistants are then assigned to their individual duty

one to manage the nozzle of the fountain syringe, one to hand sponges and instruments, one to sterilize instruments that have been used and are dirty, and one to see that the sterilized towels completely surround the field of operation that the operator's hands and instruments may not come in contact with non-sterilized objects. The instruments, sponges, dressings, basin for rinsing hands, fountain syringe, etc., being now placed in convenient situations by some of the assistants, the surgeon and his assistants should be helped into their smocks and the operation may be proceeded with. And, gentlemen, if you will follow these details and finally cleanse your wound of all clots and debris, and then make your wound impervious to the air with a thoroughly antiseptic dressing you will have an antiseptic wound and it will never require but the one dressing, for it will heal without stench, swelling or suppuration, and there will never be an appreciable elevation of temperature.

BOVINE TUBERCULOSIS.

TREATING ON THE DANGER FROM COW'S MILK, AND THE
LEGISLATIVE CONTROL OF BOVINE
TUBERCULOSIS.

BY JOHN M. PARKER, D.V.S., Haverhill, Mass.

In considering this question, it is well to consider whether the danger from milk, as we ordinarily use it, is as great a danger as has been represented, and further, we should consider carefully whether the methods recommended by the State Board of Cattle Commissioners will result in the complete eradication of this disease from among dairy cattle. If the milk is not so dangerous, and there is not a reasonable certainty of the success of these methods, then the State is not justified in crippling an important industry, and in squandering hundreds of thousands of dollars in work that is not called for, and that will not result in permanent good.

We should remember that we are not facing a sudden crisis; there has not been a sudden increase in the number of deaths from tuberculosis; on the contrary, the members of the Cattle Commission themselves admit that the mortality from phthisis in human beings is decreasing. Further, the medical profession have not requested any such radical legislation, the State Board of Health has not demanded it, and the facts in the case do not warrant it.

It is a curious condition of affairs when the Board of Cattle Commissioners press for legislation on the ground of the requirements of public health, while the State Board of Health, whose duty is supposed to be the protection of public health, stand aside as spectators.

It seems to me that the danger has been much exaggerated, and that, with ordinary precaution, the danger from bovine tuberculosis is not the great menace to the public health that, in their excitement, the Commissioners and the public have taken it to be.

In considering almost any question of importance there is always a tendency to go from one extreme to the other, and the present instance is no exception to the rule.

The infectious character of consumption was demonstrated by Villemin many years ago, but the close relationship between human and bovine tuberculosis was first proved by Robert Koch in 1882. This matter, however, did not begin to attract public attention in this country till 1887, when the subject was brought to the attention of the authorities by Dr. Winchester, of Lawrence, who was then a member of the Board. Since that time the agitation has gradually gained in strength, until the authorities have gone to the opposite extreme. There is still room for improvement in the laws relating to the contagious diseases of animals, but the Commissioners have signally failed to show the necessity for any such radical legislation as is proposed.

At the time the agitation was started there was really no check on the disease, old worn-out cows and "coughers" were butchered and sold for meat, and milk from any and every cow

was sold without let or hindrance ; at that time some steps were necessary for the protection of public health, and in consequence of the demand for protection, local inspectors were appointed, whose duty it was to seize all evidently deceased animals, as well as unwholesome meat. That was a step in the right direction so far as it went.

In 1890 Koch, under pressure, made public his work on tuberculin. This resulted in a tremendous and intense excitement all over the world, and consumptives undertook journeys of hundreds of miles for the sake of getting treated with the "new cure for consumption." It was found, however, that although it cured a percentage of cases, yet in some it caused the disease to spread through the system, establishing new centers of infection in the body. For this reason its use as a curative agent was discontinued. It had been noticed by several observers, however, that when a person suffering from consumption received an injection of the lymph or tuberculin, it invariably caused a rise in temperature, and in 1891 Gutman, a Russian, took advantage of this fact and began to make experiments with it as a diagnostic agent in cattle, and as a result of the wide notoriety and intense interest its production and use aroused in medical and scientific circles, original workers began hammering and working at this subject in all possible directions. An immense amount of valuable and good work has been done, but unfortunately through newspaper notoriety a morbid interest and excitement has been aroused among the general public, and the present crusade against dairy cattle is the result.

Some of the best experimental work that has been done with milk is the work done by the Massachusetts Society for the Promotion of Agriculture at Matapan, under the direction of Dr. H. Ernst, and in looking over this work one cannot help noticing that while there is abundant evidence to show that disease *may be conveyed* by the ingestion or inoculation of milk from diseased animals, yet the danger must be very slight in actual and under natural condition.

In the work on "Infectiousness of Milk" published recently

by the Society, a number of carefully prepared tables are given, showing the results of the investigations and inoculations.

We find that the cows, from which the milk used in these experiments was taken, were picked out by physical examination alone.

The udders may not have been diseased, but yet the cows themselves were badly diseased, as shown by post-mortem examination.

In all 36 different cows were experimented with, and the bacillus of tuberculosis was found in the milk of 12 different animals.

Experiments were made by inoculating 88 guinea pigs with milk from 15 of these tuberculous cows. The milk from only six was found capable of producing the disease, and only 12 of these 88 guinea pigs became infected.

In another series of experiments, 90 rabbits were inoculated with milk from 19 different tuberculous cows. The milk of only four of the cows produced the disease, and only six of the 90 rabbits became infected.

Again, 48 rabbits were fed with milk from five tuberculous cows, and with milk known to be infected, and only two rabbits became diseased; both of these rabbits were fed on milk from the same cow (cow E), which was very badly diseased.

Twelve healthy pigs fed on milk from these same cows gave a larger proportion of cases, five out of the 12 becoming tuberculous; but it should be noticed that three of the five were fed on milk from one cow (cow E). Further, it was milk from this same cow that infected the rabbits in the last series of experiments referred to.

Twenty-one calves were also fed with milk from these cows, and eight became tuberculous. (Infectiousness of Milk. Ernst.)

Experiments in this same line have been done by many other investigators, notably by Bang of Copenhagen. He experimented with milk from 28 tuberculous cows, and in only two cases did the milk prove to be infected, yet the cows were almost all "infected with tuberculosis to a high degree."

Nocard and May both got similar results, while Hirschbirger "inoculated milk from 20 different tuberculous cows into the peritoneal cavity of guinea pigs, and found it capable of infection in 11 cases." (Journal of Comp. Path., Sept., 1890.)

These figures are valuable, and they go to show that even where the disease is well marked and the animal highly tuberculous, the danger is not so very great; for we must remember that in inoculation experiments the milk from the diseased cow is injected directly into the tissues, and if any baccilli are present they must find lodgment; and in feeding experiments the animal experimented on is fed on this milk continuously, with every opportunity for contracting the disease, and yet, notwithstanding the favoring conditions, we find only a small proportion of experiment animals becoming tuberculous, and, as in natural conditions, when we mix this milk from tuberculous cows with the milk from healthy cows, the danger is just so much the less; if, then, we remove these diseased cows from the herd (even if we only make a physical examination in detecting the disease) and use only the milk from apparently healthy cows, we reduce the danger to a minimum.

In summing up his report to the Society for the Promotion of Agriculture, Dr. Ernst says: "While transmission of tuberculosis by milk is probably not the most important means by which the disease is propagated, it is something to be guarded against most carefully."

These conclusions of Dr. Ernst's, as has already been pointed out, are drawn from experiments with cows known to be diseased only through physical examination; that is to say, in those cases the disease was well advanced and the animals were evidently diseased animals, and it follows of course that care should be taken to exclude the milk of all such animals from the market.

But it does not necessarily follow that cows reacting to tuberculin, *but showing no physical evidence of disease*, are equally dangerous.

In this line it would be interesting to see the results of a

series of experiments with cows which show no evidence of disease on physical examination, but which do react with tuberculin.

Judging from the results of Dr. Ernst's experiments, and from the slight evidence of disease as shown by such post-mortem examinations as are reported by the Bureau of Animal Industry and the Hatch Experiment Station, I believe the milk of but a small fraction 1% of those animals would be found capable of producing the disease in rabbits or guinea pigs by either inoculation or ingestion.

But the best evidence of the absence of great danger is to be found in such statistics as those collected by Dr. Watson, Secretary of the State Board of Health of New Hampshire.

The statistics collected by him are collected from slaughter house reports, and show the amount of tuberculosis found in calves, and as calves are fed exclusively on raw cow's milk they offer by far the best of natural experiments as to the amount of danger to human beings from the use of cow's milk.

In	23,557	calves	slaughtered	there	were	only	2	cases	of	tuberculosis.
	30,477	"	"	"	"	"	1	"	"	"
	143,218	"	"	"	"	"	35	"	"	"
	23,592	"	"	"	"	"	1	"	"	"
	800,000	"	"	"	"	"	5	"	"	"
	24,766	"	"	"	"	"	1	"	"	"
	85,685	"	"	"	"	"	26	"	"	"
	1,133,295						71	—	.006	per cent.

Dr. Watson then goes on to show that the only explanation of these figures is that there are but "few bacilli in the milk of most tuberculous cows." (N. H. Board of Health Report, 1892.)

These statistics are further borne out by the Records of the Central Slaughter House, Berlin, which show "that between April 1, 1889, and March 31, 1890, 154,218 cattle and 125,338 calves were slaughtered, of this number 1,397 cattle and only 30 calves were tuberculous." (Jour. Comp. Path., June, 1890.)

My own personal experience bears this out. Some years ago I had the veterinary charge of a large dairy herd of about 400 to 500 head, mostly Jerseys. Tuberculosis was very prevalent in the herd. With the exception of the best of the

heifers, the calves were usually fattened and slaughtered for veal, and I have not seen a single case of tuberculosis in any of the calves slaughtered.

Further, it might be inferred from the reference to cholera infantum in the Report of the Cattle Commissioners, that a large proportion of these cases are caused by tuberculous milk. "Milk diarrhœa or cholera infantum," however, is not due to the bacillus of tuberculosis, but it is due to the absorption of ptomaines, or products of fermentation in impure milk—milk that has been contaminated, as a rule, after leaving the cow.

In fact, the greatest danger to infants from using cows' milk is not so much from tuberculous milk as from milk made impure by contamination after milking, or being made unfit for food through improper feeding of the cow.

"It is not necessary that milk should be infected with some specific organism to make it unfit for food." (Med. Record, Sept. 19, 1891.)

In face of these figures, then, and in view of the fact that the mortality from tuberculosis has fallen 35% within the past few years, is it just and reasonable to demand the general use of tuberculin in all herds throughout the country, with the wholesale destruction of all animals that react to the test? In Europe, where they use tuberculin to a great extent, they do not consider it necessary to destroy all animals that react.

In referring to this matter, Prof. Bang of Copenhagen, Chief Veterinary Surgeon to the Danish Government, says :

"It is an undoubted fact that, in the large dairies, when tuberculosis exists in them, it is so prevalent that the number of cows which give a hyperthermic reaction may be as high as eighty per cent. It is therefore evident that it must occasion an enormous loss to the proprietors to slaughter a large majority of their best milch cows, and to deprive them of the possibility of maintaining their stock without buying more—a matter of great importance when the cows are good. In my opinion such a course is much too severe. Why not keep for years those cows which are apparently healthy, and do not exhibit the least sign

of tuberculosis, except the febrile reaction after injection? And why, also, prevent their breeding? The great majority of such cows are only affected in a very slight degree; a good many of them have only some small nodules in the lymphatic glands, and there is no reason to believe that tuberculosis would rapidly develop in such animals. Frequently enough the disease remains limited for years, and in some it is even possible for recovery to take place; at least I have very often found small and perfectly calcified tubercular deposits in aged cows. Such cows might give birth for years to absolutely healthy calves. I am inclined to attribute to direct heredity—that is, contagion from mother to foetus—a larger share in the propagation of tuberculosis than Nocard does. Up to the present time I have examined twenty cases of tuberculosis in the foetus and twenty newly-born calves, but the disease is never transmitted to the foetus unless the mother is in a very advanced stage of the disease—probably always generalized. When the cow is only slightly affected, the calf is always born healthy.

“I am, therefore, of opinion that all the tuberculous cows, apparently healthy, should be kept and allowed to breed; but, at the same time, they ought to be well separated from healthy animals, and their calves should be removed from the infected sheds immediately after their birth.” Vety. Mag., Dec., 1894, p. 779.)

Again, Nocard, one of the best known veterinarians in Europe, does not believe it necessary to destroy them, but says: “They may be fattened and fed for beef.”

(To be continued.)

ADDRESS OF DR. C. B. ORVIS,

PRESIDENT OF THE CALIFORNIA STATE VETERINARY MEDICAL ASSOCIATION.

GENTLEMEN: In assuming the presidential chair of this association for the ensuing year, permit me to thank you most sincerely for the honor you have conferred upon me. By being

unanimously elected, I feel gratified at such an expression of esteem and confidence. I know you have not given me this position for any special service I have done, or for any special professional ability. I consider it, therefore, a mark of favor or respect for the common practitioner who has tried to do his duty in his district, both to his patrons and his profession, to the best of his ability.

It was with considerable diffidence that I allowed my name to be used for this important position, and knowing, as I do, the capacity of the man whom I am to succeed, and the great amount of work accomplished and more begun but uncompleted that we have to finish if we continue to prosper, makes me feel inadequate to the task.

To the secretary, the greater part of the burden of an association falls, and I am thankful to know that Dr. Archibald, who has served the association so faithfully in the past, will continue the same zeal in the future, and as for myself, I promise you every effort of which I am capable for the welfare of the association. Our efforts, however, will be of no avail unless we have your hearty co-operation; but I feel sure it will be accorded us, and I therefore enter upon the duties with much confidence in the prosperity of our society for the present year. The value of these meetings are hard to estimate. We meet here together on a level—exchange ideas, relate experiences, report cases, etc., etc.; then we go home refreshed. If on going home one cannot see where he has been slack or negligent in one way or another; if he does not feel like referring to his text-books, case-books, etc., and brush the dust off his desk and shelves, and if he is not quicker to notice dirt in the hospital, or an untidy box, and if he does not take a little extra pains to dust his clothes and black his boots, he has not received the same amount of enthusiasm that I have received. These are personal advantages, and our programme should be so arranged as to arouse this feeling and to educate each member in the different branches of our calling, and in this way we are best able to keep informed as to the use and application of

the latest agents, methods and appliances whereby we may become proficient and most skilled in our profession. Herein lies the secret of large membership and good attendance, but is second to the main object of our association, viz.: To advance the standing of the veterinary profession and to obtain positions and recognitions that rightly belong to it. The plans for procedure to this end can best be discussed at our association and committee meetings, but I will make no reference to them here.

In the past nine years—for that is the length of time I have been identified with the work in this State—the common people have been greatly enlightened as to the mission of the veterinarian. There is no longer a place for the empiric who says glanders is unknown here, or the man who went through the country armed with a saw who contended that nearly all horses could be greatly benefited by the use of that instrument applied in shortening the incisor teeth. While there are a few who still succeed in disposing of their so-called sure cures, they are becoming more scarce all the time and the qualified veterinarian is being consulted as to the reliability of said nostrums before purchases are made.

While there are many things to be proud of for the recognitions we have received and the advances we have made, yet we have many hindrances and oppositions that will require our most earnest and continued efforts to overcome.

During the past year we have been more than commonly recognized by our medical brothers. They are recognizing the advisability of having skilled veterinarians as meat and dairy inspectors and recognizing their ability as sanitarians. They have invited us and we have become members of the State Sanitary Board, and our essays, remarks and resolutions have received courteous attention and favorable mention.

Dr. Ruggles, President of the State Board of Health, has shown not only to me personally, but to the profession, many favors and courtesies. This same spirit has been more generally felt throughout the State of late, all of which shows to my mind.

that we are showing to the world by our professional and gentlemanly demeanor that we are entitled to a higher standing both professionally and socially than we have yet received. The very discourteous treatment a number of my friends and myself received at Stockton last May in carrying out the duties of a public office at the hands of those connected with a State institution was entirely unwarranted, and received the just condemnation of the press of the State, and goes to show that the mass of the people are ready and willing to accord us that esteem and confidence we so much desire.

Within the last few months the State University has established a branch in the form of a veterinary college. In this connection I feel like giving special credit to those by whose efforts the California Veterinary College has been established, notably Drs. McNutt and Bowhill. The adoption of a curriculum comprising three college years is commendable, and it is hoped that the requirements for matriculants adopted will be strictly adhered to, so that none but gentlemen of intelligence and ability, coupled with a fair general education, can gain admission to the college.

It would also be highly gratifying to me should the Directors adopt the plan of having competent professional men to conduct the examinations in place of having the teacher examine his own pupils. This plan in effect will eventually be adopted by all the colleges, we believe. The California College properly conducted can't help but be a power in advancing the standing of the profession on this coast.

The defeat in the Legislature of the bill providing for State and county veterinarians, quarantine laws, etc., is to be regretted. The need of such a law is apparent at every hand. The extent that contagious animal diseases are allowed to exist without restrictions in this State is unparalleled, so far as I am informed. While the present condition is highly detrimental to the live-stock interests of the State, we, as veterinarians, can console ourselves in the fact that the greater the amount of disease, the more the practice for the general practitioner, until

such time shall come that our efforts for the best interests of our agriculturists shall be better appreciated by our legislators.

In our association we have demonstrated the strength of unity of action and purpose, for nearly everything that has been accomplished in our State in the past nine years, of importance to the profession, has been done by the energies of this association and its members. In the past our numbers have been small, but with our now quite large and increasing membership, if we can enthruse that same energy and unity of sentiment—and there is room for more harmony than has been displayed—into our large membership, we will indeed be a power, and, judging from what has been accomplished in the past, we will soon be on equal terms with the profession in the Eastern States, if in fact we do not surpass them in professional standing.

Now, before closing my remarks, I desire to draw your attention to another matter, one that it seems to me has caused a great deal of discredit to be given to the veterinarian, and all because we have allowed people to be misinformed. I refer to the nature of glanders, as understood by the ordinary horse owner. Much of the matter taught and written upon this subject, I think, most of you gentlemen will agree with me is incorrect—at least misleading.

Glanders is a loathsome and much-to-be-dreaded contagious disease, not because, as people think, it is very rapidly fatal, and because if one animal has it all other animals susceptible must likewise contract the disease and shortly die that have been in close proximity to said diseased animal, but more properly because it shows itself in so many different forms and exists many times without outward manifestations, or but so slightly as not to cause suspicion of disease, but all the time said animal is spreading the disease to other animals of susceptible species. Also, because as a rule the beast has to submit to a long, lingering disease, from which there is no hope for recovery.

I inform my patrons in the following manner: Glanders is a

contagious disease, communicable to man and nearly all the domestic animals—the ox being a notable exception. That it usually runs a slow course, with periods of latency and acceleration. That the disease at all times and stages is dangerous, but that at times the virus, if present, is much less active and the disease consequently less contagious. That the period of incubation is uncertain. That if once inoculated no known agent will prevent the development of the disease, and that Mallein will detect the presence of the disease if it exists, whether there are any visible manifestations or not. Impress upon them the necessity of extreme vigilance in order to detect the hidden workings of this very prevalent disease. Refute the assertion that the left nostril is necessarily the location of the disease in glanders, or that an unthrifty condition of the animal always accompanies it.

I make mention of glanders because of the gravity and prevalence of the disease, and, on account of the seriousness of the existant condition, the people should have a correct knowledge of it.

With proper laws and competent officials to execute them, with the use of Mallein in diagnosis, this ever dreaded disease should become unknown in the near future to the common practitioner. I should like to say more of this valuable agent, and also of Tuberculin and Anti-Toxin, but not choosing to intrude on your valuable time longer, I will desist.

THE PROFESSION " 'WAY DOWN SOUTH."

W. H. DALRYMPLE, M. R. C. V. S., late Baton Rouge, La.

The Veterinary Profession is no doubt making steps toward advancement in the more Southern States, that is, if the increase in the number of graduates practising means anything, and we are full of hope that it does mean a great deal—good results ought in time to appear, and the stock-owner, who has for so long, and still is to a large extent, the victim of "hoodooism,"

illiteracy quackery, etc., will be benefited, and his eyes will be opened to the fact that the veterinarian is the practitioner of a *branch of medicine*, based upon a knowledge of physiology, pathology, and therapeutics, similar, although we might say of wider range, from a medical standpoint, on account of the various types of animals with which he has to deal, than his brother in the field of medicine which embraces only the human species.

Progress is slow in the education of the laity to the appreciation of the importance of the profession as conservers of public health and wealth. Such work must devolve upon the representatives of the profession, and cannot but result in personal benefit, as well as the elevation of our branch of medicine to its rightful level of one of the learned professions.

There is an old and widely prevalent belief among the laity, as well as a great many human practitioners, who are encased in a limited sphere of knowledge concerning their own special branch only, that there is a mystery encircling the principles and practice of veterinary medicine and surgery as compared with that of the human subject. This, of course, can be accounted for by the long practised "humbugism" indulged in by the ignorant quack, to cover up his own want of knowledge, as well, as to throw mystery around his so-called specifics and operations, and contracted knowledge and research on the part of some of our M.D.'s. from the standpoint of comparative medicine. We believe we are justified in making this latter assertion, when we state that we have been asked the question by a dean of a medical college, if a horse ever had pneumonia? and was told by another that he was not aware that cattle ever suffered from tuberculosis until he read it in a veterinary periodical within six months.

The work of elevating our profession by our graduates to the level where recognition and appreciation of it is forced upon the people, is perhaps a laborious one, but, if ever it is to take its legitimate place among the other learned professions in the South the work must be begun and completed by those who are qualified members of it.

We find in some states South—and we presume it is the case to some extent all over the country—men of the “flying specialist” order, so-called veterinary dentists, cure-alls, etc., poaching on the territory, and at the very doors of the qualified veterinarian, taking barrels of money out of the pockets of the unwary stock-owner by charlatanism, and depriving the practitioner of that which ought to be his. We feel surprised, and exclaim, “however can people be fooled in such a manner, when there are qualified men right in their midst?” An important question seems to arise right here: Are we, by legitimate and professional methods, forcing ourselves and the importance of our profession before the eyes of the public? Are we trying to convince the people, that by our superior knowledge, qualifications and conduct, we are more worthy of their confidence and esteem than the empiric and swindler, and that we are the jealous guardians of the integrity of a noble branch of medicine, whose beneficent results are so far-reaching in preventing and alleviating the sufferings of the dumb animals, as well as playing a most important part in controlling and eradicating transmissible diseases which are fatal to humanity?

It is beyond doubt that a good work is being done in those states who have veterinarians attached to the staff of their Experiment Stations—their position affording them a favorable opportunity to enlighten the people on the possibilities and advantages of veterinary science, when professionally applied, in contradistinction to the ignorant and often barbarous methods of the illiterate quack, or even those who are qualified, in the eye of the law, by being possessed of a piece of sheepskin. A profession is elevated or degraded by its representatives. A public who have been from time immemorial, accustomed to empiricism, cannot be expected to realize or appreciate the wonderful changes in the “horse doctor,” brought about by suitable education and training, unless the practitioner himself keeps abreast of the advances of his profession, both professionally and socially, for it is the man who makes his profession what it is.

Although the majority of practitioners do honor to their calling, there may be those whose only regard for their diploma is its use as a means for money-making, which is to be deplored. Of course, it ought to be the aim of everyone to do the best he can for himself, financially, but such is not incompatible with at least an effort at raising and upholding the professional standard.

With regard to this latter point, we should like to allude to the usual headquarters of the veterinary surgeon in the South—and probably in other sections—and that is the livery stable. It seems to be a custom, which is very generally in vogue, and there may be some good reasons in favor of it, from the standpoint of economy to the practitioner, but, we are strongly inclined to the opinion, that this system has done as much, if not more, to lower and keep down the social and professional standing of the veterinarian than any other, in the eyes of the better class of people, whose society and practice it ought to be his aim to cultivate, especially in city populations.

The livery stable owner may be an honored and respected citizen, but everyone knows that the atmosphere and surroundings are more calculated to degrade than to elevate a professional man in the opinion of the better class of inhabitants. This is no empty theory, but a fact which we know to be true, from expressions on the subject by gentlemen who realize that the profession merits a much better standing.

It is the head-office of the quack, because there he meets with congenial spirits of his own type, in the usual crowd of loafers; but why an educated veterinarian should be an attaché of the ordinary livery stable, it is hard to reconcile with the desire for professional advancement. We have no criticism whatever to offer with regard to the livery, feed or sale stable businesses, they are highly honorable and legitimate industries, but it is the veterinary surgeon's idea of the seemingly absolute necessity for identifying himself with, and making his office and headquarters at these establishments, which we think is erroneous, and is detrimental to the dignity of a profession,

which in some sections of the Union and in other countries is recognized as on a level with other professions, and a most important branch of medical science.

We have had an opportunity of observing a condition of things with regard to the standing of the profession in some of our large Southern cities, which we are forced to believe is brought about very largely by what we have alluded to, viz: our business relations and associations. In one large commercial center, where there are several graduates, and as many non-graduates, the latter are just as much thought of professionally (?) in the community as the former, or in other words, the graduates do not seem to have impressed the fact upon the general public that they are the exponents of a noble science and art, achieved by education and study, equal to, and in many instances greater, than that required by a large number of the medical colleges of the country, and are consequently superior to the empiric, and more worthy the patronage of and social recognition by an enlightened community, but such appears to be the case, nor will it be changed, we are afraid, so long as the one is content to remain on the same level with the other. Under such circumstances, patrons and the general public cannot be blamed, for it is a fact, that the majority of the people are not aware that there is a particle of difference, as to ability, between the professional man and the jack-leg. When anything goes wrong, which the ignorant coachman (colored usually) cannot chance to right, a livery stable is connected by telephone, and a *horse-doctor* requested to be sent. Even should he be a graduate, he rarely seeks, and more rarely is given, an audience with the owner, on the subject of the ailment of his animal, being or having to be content to transact his professional business with the coachman or hostler.

It is a fact, of course, that the profession is sparsely represented in the greater part of the South, and no legal protection given to graduates, but, for that reason alone, if for no other, we think qualified practitioners ought the more to assert themselves, and while doing all they can to legitimately fill their

own coffers, try to throw a professional halo around their own head, which would illumine much of the darkness and help dispel the ignorance under which we are laboring, and thereby add to the dignity of our honorable calling.

Another point worthy of mention in this connection, which we think often militates against the social success and dignity of the veterinarian who is part and parcel of the livery or feed stable, and that is, when one is requested to examine horses for clients. A gentleman wishing to purchase a horse or pair of horses subject to examination, should it be from the establishment to which the examining V. S. is attached, he naturally is inclined to feel that the examination is apt to be in favor of the seller. It may be unreasonable to think so, but why shouldn't he? Even if the surgeon is perfectly independent and gives a conscientious opinion—and we hope all do—the very fact of his seeming connection with the vendor is sufficient often to shake the confidence of the buyer in his veracity, which reflection extends further than to the mere individual.

These instances quoted are not for the purpose of condemning the custom referred to, and the possibilities accruing therefrom as positive evils, *per se*, but we think it can be easily seen how such a custom is more calculated to prevent proper professional recognition and retard our progress, as a profession, than otherwise.

The veterinary surgeon is an individual on whose opinion and integrity his client has to rely, and which mean a great deal. That opinion should be straightforward and scrupulously honest, no matter how it hurts, but if, through business or other relations, we leave room for the honesty of our opinion to be doubted, then we do harm, and we must remember that not only are we the individual sufferers morally, but our profession more so.

We have said the present system is an old one, and it will no doubt take a long time to make any radical changes, if ever, and it may occur to some that we are condemning without advocating any means for improvement. We would, however,

suggest that where it is at all practicable the veterinarian ought to have his own establishment, however small it may be, fitted up with hygienic carefulness as far as circumstances will permit, for the comfort of his patients—with his little office and pharmacy, neatly and attractively arranged, where clients can come to seek professional advice, or send their animals to be treated, and feel there was something of a professional air about the place.

The veterinary infirmary or hospital is a necessity, and when well appointed and equipped, is a legitimate and standing advertisement, not only to the veterinarian himself, but to the profession, and we feel sure that the public would not be slow to both recognize and patronize such professional progression, and come to feel that the veterinarian was not simply a somebody usually to be found about a livery stable, but that he and his professional quarters were as much to be recognized and appreciated as necessary to the well-being of a community as is the M.D. with his office and surgery, or in fact any other profession.

We do not deem it necessary to go into any lengthy discussion of the subject. To everyone who has the interests of his profession at heart, the situation we think is plain enough. The few facts quoted and suggestions given are not from any spirit of discourtesy to any of our professional brethren, but as food for thought, and with the view of trying to raise the standard of our profession in the eyes of the people, which is sadly needed.

We have veterinarians in this country holding positions high up in both the social and professional scales, and in other countries there are those who have had honors conferred upon them for professional attainments by the sovereigns of their different realms—and although we are not oblivious to the fact that we are only in our infancy and few in numbers, comparatively, in this southern section of the Union, there is no good reason why those of us who are here should not use every legitimate means in our power to elevate ourselves, and by so doing convince the people that we are the followers of a *profession* which is as honorable as it is noble.

MODERN NEUROTOMY, WITH ESPECIAL REFERENCE TO THE LOW OPERATION.

BY T. B. ROGERS, D.V.S.

Local anæsthesia.—The use of cocaine for the purpose of producing local anæsthesia during the performance of neurotomy is, I believe, a distinctly American procedure; the first time I ever saw it used was about ten years ago, when Prof. R. S. Huidekoper made the upper operation on a patient suffering from tetanus. While cocaine is the drug usually used when painless section of the common integument, or other tissues is desired, I have found cold water equally efficacious in large incisions of the skin necessary in the removal of tumors, &c., indeed the most perfect local anæsthesia I ever saw was due to the injection of water prior to the operation for fistulous withers.

The local anæsthesia following the cocaine injection is usually marked, though occasionally cases are met with, where either through idiosyncrasy or systemic absorption of a too concentrated solution, the patient becomes unmanageable.

Part of this anæsthetic effect is doubtless due to pressure on the nerve endings by the injected liquids, part to the specific effect of the drug. (I may mention in passing that I have on one occasion used a ten per cent. solution of citrate of caffein with great success in a case of needle firing of the fetlock). As cocaine produces a temporary vaso-motor constriction, and hence diminishes the local blood supply, its use makes the operation somewhat less bloody.

Strength of the solution.—A four per cent solution has given me uniformly good results, and is less liable to cause excitement than the stronger solutions used by some operators, under the mistaken idea that a more perfect anæsthesia will be thus obtained.

Not more than thirty minims should be injected over each nerve,

a larger injection, by its infiltration of the overlying connective tissue, tends to obscure the operation.

I have never bandaged the leg above the seat of the injection, or attempted to diffuse the fluid by pressure, and an experience of more than 150 cases warrants the statement that such a course is necessary.

I make consecutive injections over all four nerves, and as soon as the last one is made, proceed to divide the nerve first injected.

The veterinary hypodermic syringe has usually too long, and stout a needle for this operation. while the human needle is too delicate. A *short slightly curved* needle, of calibre between the two, is the ideal instrument; it is not so apt to be lost should the patient swing his leg when he feels the puncture, and the curve renders it less liable to injure the vessels.

A drop of carbolic acid should be added to every four drachms of the cocaine solution.

Means of restraint.—A twitch may be used while making the injections, although many patients are quieter without it; no other restraint is necessary.

Position of the limb.—The leg is flexed at the knee, and extended at the fetlock, is slightly abducted when the outside is to be operated on, while for the inside, it is so strongly adducted as to cross the opposing member. (I have operated on a few cases, for ringbone, in the posterior extremity; in these I had an assistant hold the limb like the smith does to dress the hind foot, but I am frank to say that I prefer to cast in these cases).

The operation.—Instruments required—a good sized scalpel, scissors curved on the flat, a large stout aneurism needle with serrated point, and a curved, probe-pointed tenotome, are all the instruments necessary. I have for some years used this aneurism needle instead of forceps, and find it much preferable to them; it has the great advantage of allowing the operator to do his own sponging, it tears the connective tissue rapidly and neatly, and is used after exposure of the nerve, to pass under it and stretch it.

The technique of the low operation.—Immediately below the metacarpo-phalangeal articulation, a surgical triangle is formed, its base, reversed, is represented by the lower part of the articulation, and being shorter than the other two legs renders the triangle isosceles, the anterior leg is formed by the posterior external or internal border of the first phalanx, while the posterior leg is formed by the anterior edge of the perforans tendon.

Within this triangular space (which is well marked in a clean limbed short-haired horse) are contained the vessels and nerve of the lower part of the digit; their position, running from before to behind, may be recollected by the unremonic word VAN—vein, artery, nerve. They are crossed superficially, and somewhat obliquely by the tendon of the ergot; this tendon varies in shape, sometimes it much resembles in appearance and calibre the nerve of the part, again it may be double, or may form a somewhat broad and considerable sheet, whose division may be necessary in order to reach the underlying nerve.

A bisection of this triangle on the line of its long limbs allows the nerve to be readily reached. When exposed it should be stretched until an inch can be readily removed from a cutaneous incision of about half that length. Nerve stretching is an important part of the procedure, as it allows the cut end to retract beyond reach of the cicatricial tissue, and thus avoids the danger of subsequent neuroma, and as the nerve is much more extensible than the artery, it allows differentiation in case the operator's eye for form and color is not good, or in cases where the slight hæmorrhage obstructs the view. It is not necessary to expose much of the nerve before passing the needle under it, and I often isolate it by passing the point of the needle beneath it, then using the needle as a lever, with the first phalanx for a fulcrum, draw the nerve from its bed. We must look for healing by first intention, and remember that every torn shred of tissue lessens the chances of our gaining that end. When the nerve is sufficiently stretched it should be held taut outside of the incision, the distal end removed at the lower commissure so as to leave for healing but a clean skin wound.

The wounds should be irrigated with water until the slight hæmorrhage stops, then washed out with a weak creolin or bi-chloride solution, and be drawn together by a somewhat narrow bandage. This, kept wet with an antiseptic, is left on until cicatrization takes place, unless swelling occurs above or beneath it.

The after care of the foot.—If possible lower the heels and turn the patient out for some weeks after the operation. A practitioner of great experience once remarked to me that he believed that this was almost as important as the operation, and I am inclined to go a good part of the way along with him. The foot should be soaked occasionally, and extra attention must be paid to its condition in hot, dry weather.

Is the low operation advisable?

There is a difference of opinion on this point. My own experience has been so considerable that I may keep within the bounds of modesty while giving an opinion. When we consider that the low operation always gives relief, that this relief is usually marked, that the operation is as nearly absolutely safe as an operation can be, and that in cases of partial failure it paves the way for a subsequent high neurotomy (for I believe that a low operation prepares the foot by a gradual alteration of nutritive conditions for the safe division of the plantar nerve), we must admit that a strong case has been made out for it.

What are the usual causes of total or partial failure?—Mistakes in diagnosis, running horsemen often have a low neurotomy done when the patient is suffering from concussion of the immature bones or sore shins. I believe that occasionally the tendon of the ergot is divided in mistake for the nerve (I did it once myself). Leaving the nerve end in the wound is a common cause of failure, and this may be suspected in all cases where there is tenderness on pressure over the region of the scar, even when no clubbing of the nerve end can be demonstrated.

REMARKS ON OSTEO-POROSIS.

BY N. B. RHODES, D.V.S., Tampa, Florida.

To the Editor of the American Veterinary Review :

Early in the winter of 1893-4 the idea began to take possession of my mind that the dreaded disease, Osteo-porosis, was due to micro-organism. I came in contact with an alarming number of animals suffering with this malady, both in the horse and mule. In some cases the disease would attack an animal and run its course to a fatal termination in a very short time, say two to four months. Other cases would linger on for months, with occasional periods in which the animal would seem to improve, then the disease would seem to take a fresh hold, and progress with renewed energy to a fatal termination; in some rare cases the disease would seem to be checked, or held in abeyance, as it were, the animal doing moderate slow work all the while, with little or no show of discomfort.

Carefully investigating numerous cases, I found that scarcely, without exception, these animals showed more or less febrile disturbances, the temperature never reaching a very high point, but nearly constant. I think 102 3-5° F. is the highest point in my record. One to two degrees is about the average. Early in the spring of '94 I was called to see a horse, some twelve miles west of the town, belonging to a widow lady. It was a case of Osteo-porosis in an advanced or inflammatory stage. I advised the destruction of the animal; a week later the horse was destroyed, and the lady came to town to purchase another, and secured my service in examination for soundness. A beautiful bay gelding, six years old, was selected, and found to be sound after a very thorough examination and severe test. This horse was given the same stable that the previous one occupied, and in three months had contracted "Big Head." This horse was traded for another, placed in the same stable, and he also contracted the disease. This animal was disposed of, the stable

was burned, at my suggestion, since which time she has had no further trouble.

During this time a gentleman living four miles north of town was having identically the same experience—the destruction of animals affected and *of the stable*, the atmosphere of which had been thoroughly impregnated with the bacteria.

Another like instance occurred at a phosphate mine fifty miles north of here, where three mules had the disease, two of which, I am quite convinced, contracted the disease from occupying stables in condition as above recited.

After much correspondence, I had, about the middle of last summer, the good fortune to secure the valuable service of Prof. Billing, of Lafayette, Ind., who was making some microscopic researches in Florida in behalf of the Government, and who was prepared with the necessary instruments, storing fluids, etc.

A subject was secured at a cost of \$25, and we took specimens from the lower maxilla, the scapulo-humeral articulation, sawing about four inches of each bone, the lumbar region of the vertebral column, a quantity of blood and urine. In each of these specimens we found the microbe in enormous quantities; the urine we could not examine as we had no polariscope. They are of the round or cocci variety.

Prof. Billing carried with him these specimens, and I regret that I have heard nothing further from his researches.

From these investigations I construe that it is never safe to allow one animal to come in contact with another suffering with “Big Head” for any length of time, or more particularly to occupy a stable previously inhabited by a “Big Head” patient, without first very thoroughly disinfecting the premises with a strong solution of bichloride of mercury, say 1-300.

Will not some of my brother veterinarians give us their experience and observations on this dreadful disease, and those among you who have the instruments will find, I think, much pleasure and food for thought in these researches.

SOCIETY MEETINGS.

CALIFORNIA STATE VETERINARY MEDICAL ASSOCIATION.

SAN JOSE, CAL., March 13th, 1895.

On the above date the California State Veterinary Medical Association held its regular quarterly meeting at the St. James Hotel, San Jose, Cal.

The president, Dr. C. B. Orvis, called the meeting to order at 3 P.M.

Upon roll call the following members were found present: Drs. Orvis, Spencer, Sr., Spencer, Jr., Egan, Forrest, Sr., Forrest, Jr., Wadams, Schodde, Shaw, Skaife, Fabbi and Archibald. Visitor: Prof. A. A. Cunningham.

Letters of regret were read from Drs. Pierce and Maclay.

Under the head of reports of Board of Examiners, Committees, etc., there not being a quorum of the Board of Examiners present the chair appointed the Secretary to act on the Board in conjunction with the two members of the Board that were present. A recess was declared in order to allow the Board to consider applications for membership. Upon the reconvening, the Secretary submitted the following report:

GENTLEMEN:—Your Board of Examiners having had under consideration the applications of Drs. J. R. Shaw, A. B. Wise, J. A. Edmons, J. J. Streets, B. W. Schodde, J. W. O'Rourke, E. J. Creely, S. A. Withers and R. J. Withers, respectfully recommends that they be elected to membership, also having had under consideration the applications of O. C. Baldy and J. Trullinger, respectfully recommend that their applications be rejected. Signed by Drs. Spencer, Sr., Egan and Archibald.

On motion, duly seconded, the report was accepted and placed on file.

The Committee on Legislation was then called upon to report. Owing, however, to the absence of the Chairman, Dr. Spencer, Sr. gave a partial report, which was completed by the

Secretary. The report was accepted and the committee discharged. In this connection Dr. Spencer, Sr., made a few remarks regarding the support given the Committee on Legislation by the members of the association. He stated that the failure on the part of the committee to obtain the passage of Assembly Bill No. 210 was entirely due to the lack of interest taken in the matter by the members. The Secretary also made a few remarks on this subject, in which he stated that it was impossible for one or two members of the association to obtain any legislation alone; he also stated that where a legislator had been interviewed by a veterinarian from his district he invariably proved a friend to any bill introduced by the profession.

Under the head of Application for Membership, the Secretary presented the name of C. L. Megowan. The name was referred to the Board of Examiners.

Under the head of Admission of New Members, the following gentlemen were elected: Drs. J. R. Shaw, A. B. Wise, J. A. Edmons, J. J. Streets, W. B. Schodde, J. W. O'Rourke, S. A. Withers, J. A. Withers and E. J. Creely.

Under the head of New Business, Dr. Wadams moved that the thanks of the association be tendered Assemblyman Berry for the great interest he had taken in Assembly Bill 210. Carried.

On motion of the Secretary, a committee consisting of Drs. Wadams and Spencer, Sr., were appointed to convey the thanks of the association to Assemblyman Berry in a suitable manner.

The subject matter of sending a delegate to the next meeting of the U.S.V.M.A. was brought up by Dr. R. A. Archibald, who endeavored to portray to the members the necessity of such action on their part; he also stated that it was his opinion that if the association evinced sufficient interest in the matter during the next two years the U. S. V. M. A. would decide upon California as the place of meeting in the year 1897.

Dr. Spencer, Sr., also spoke on this subject in the same strain as the Secretary had done.

The Secretary moved that the association levy an assess-

ment of five dollars per capita for the purpose of defraying expenses of a delegate to the next meeting of the U. S. V. M. A., also that the Secretary be instructed to collect same and at the same time notify the members that at next quarterly meeting held in June a delegate would be elected. The motion was duly seconded and after considerable favorable discussion it was eventually adopted unanimously.

Prof. W. F. Skaife on behalf of the Faculty of the California Veterinary College, extended to the association an invitation to hold their meeting in the college building when they again met in San Francisco.

The following resolution was presented and adopted unanimously :

WHEREAS, It is a notorious fact that during the twenty-ninth, thirtieth and thirty-first sessions of the State Legislature, one Thomas Carpenter, a veterinary surgeon and a resident of Oakland, did use all means in his power to defeat any and all movements toward the advancement of the veterinary profession in the State, and

WHEREAS, This action on the part of the said Thomas Carpenter was wholly due to the jealous and abject sentiment which rankled in his breast toward the members of the California State Veterinary Medical Association and other members of the veterinary profession in the State, who have always and are yet struggling to gain public recognition as practical sanitarians and as scientific gentlemen, and

WHEREAS, The veterinary profession in the State of California has suffered through the actions and machinations of the said Thomas Carpenter, and

WHEREAS, The said Thomas Carpenter is at the present time endeavoring to gain the position of Meat and Milk Inspector to the Board of Health of the City of Oakland, therefore be it

Resolved, That we the members of the California State Veterinary Medical Association do hereby protest against the appointment of the said Thomas Carpenter to the office of Meat

and Milk Inspector in the City of Oakland, as we believe that such action on the part of the Health Authorities would work a hardship on the people of the City of Oakland and at the same time be a detriment to the interests of the veterinary profession throughout the State of California, and be it further

Resolved, That a copy of these resolutions be forwarded by the Secretary to the Oakland Board of Health and that a copy be spread upon the minutes.

Signed,

C. B. ORVIS, *President*.

R. A. ARCHIBALD, *Secretary*.

Upon motion the President, Dr. C. B. Orvis was authorized to represent the association at the next meeting of the Sanitary Convention to be held in San Francisco in April.

The Secretary moved that when this meeting adjourns it adjourns to meet in Stockton on Wednesday, June 12th, 1895.

Upon motion the association took a recess until 8 P. M.

EVENING SESSION.

The association reconvened at 8 P. M., President Orvis in the chair.

Under the head of Reading of Papers and Discussions, the president, Dr. C. B. Orvis, delivered his inaugural address, in which he thanked the members for the great honor they had conferred upon him, he reviewed the progress of the profession in this State in the past nine years, also the efforts of the profession to obtain suitable legislation. He dwelt considerably on the prevalence of glanders, tuberculosis and other contagious and infectious animal diseases, and he deplored the lack of proper laws for the control of same. The address was listened to with much interest by the members present and the applause that followed its reading showed the manner in which it was appreciated.

The next business on the programme was the reading of a very interesting and instructive paper by Dr. H. A. Spencer, entitled "Antiseptic Surgery." As usual the Doctor submitted

for the consideration of the members a spicy, practical and well written thesis. The discussion that followed demonstrated the fact that the subject was well chosen, as the members to a man participated in the discussion and showed by their attention and interest that they considered it to be one of the most important subjects that could have been submitted to them.

Owing to the unavoidable absence of Drs. Faulkner and Jackson, who were also appointed essayists for this meeting, no more papers were presented, but several interesting cases were reported by the different members.

Upon motion a vote of thanks was tendered Drs. Orvis and Spencer, Sr., for the able and zealous manner in which they had entertained the meeting.

The Chair appointed the following named gentlemen as essayists for the next meeting: Drs. Fox; Skaife, Eddy and Fabbi.

The Secretary made his regular quarterly statement regarding the advisability of as many of the members as possible joining the U. S. V. M. A., he stated that he could supply application blanks to those who wished to make application for membership.

Drs. H. A. Spencer and H. F. Spencer extended to the members a cordial invitation to meet at their hospital and participate in a clinical entertainment. In behalf of the members the Chair accepted the invitation in the same spirit it was given.

There being no further business before the meeting it adjourned to meet in Stockton on June 12th, 1895.

CLINICAL ENTERTAINMENT.

On March 14th, 1895, at 9 A. M., the members of the California State Veterinary Medical Association assembled at the veterinary hospital at 224 E. St. John Street, San Jose, on invitation of Drs. H. A. Spencer and H. F. Spencer to participate in a Clinical Entertainment.

The first and second operations on the programme were the

castration of a double cryptorchid and a single cryptorchid by Dr. H. A. Spencer. In the performance of these operations the Doctor demonstrated the fact that he has no superior as an operator in the United States.

The third operation on the programme was the extirpation of a champignon by Dr. Archibald, ably assisted by Dr. H. F. Spencer. The operator demonstrated his method of operating on these cases on the operating table. The tumor resected was quite large and as far as its removal was concerned it was successfully accomplished.

The fourth operation on the programme was ovariectomy in a bitch by Dr. Archibald. This proved to be a peculiar case, inasmuch as it was found when the operation was well advanced that the animal was pregnant. However, the operation was completed and from latest accounts the bitch seemed to be doing well.

The fifth operation was the application of the actual cautery for the cure of sidebones. This operation was demonstrated by Dr. J. R. Shaw, who performed the operation with the thermo-cautery. The members were loud in their praises of the manner in which the operation was performed.

The sixth operation was the removal of a number of hypertrophied lymphatic glands from the neck of a dog. This operation was performed by Dr. H. F. Spencer, who gave ample proof of his ability as a surgeon of no ordinary skill and ingenuity.

The seventh operation was the amputation of the leg of a fox terrier bitch at the tibial region. This operation was performed by Drs. Spencer, Jr., and Archibald.

The members highly commended the manner in which the entertainment was provided for by the San Jose veterinarians and upon the completion of the seventh and last operation they dispersed to their respective localities, with the feeling that the time purloined from their business was by no means thrown away, and all expressed the conviction that clinical entertainments in connection with our meetings were a success and that

in future no ordinary circumstances would prevent them from being present at similar entertainments.

R. A. ARCHIBALD, V. S., *Secretary*.
SACRAMENTO, CAL.

THE WISCONSIN SOCIETY OF VETERINARY GRADUATES.

The fifth annual meeting of the Society of Veterinary Graduates was held at Madison in K. P. Hall, Feb. 6th and 7th.

The meeting was called to order by the President, Dr. Woodford.

Roll-call showed eight members present, Drs. Arpke, Clark, Laws, Leech, Ormond, Roub, E. D. Roberts and Woodford, and one visitor, Dr. Watson.

The minutes of the last meeting were read and approved.

The annual reports of the Secretary and Treasurer were read and adopted.

On motion the question of patenting the seal was laid over for one year.

Charges having been preferred against Dr. S. G. Binger, by Dr. J. F. Roub, it was moved and seconded that he be notified by the Secretary to appear before the Executive Committee, and show cause why he should not be expelled.

The name of Dr. T. W. Watson was proposed for membership, and was referred to the Board of Censors, who reported favorably on the application.

It was moved and seconded that Dr. Watson be elected a member of the society. Carried.

The Committee on Legislation presented a bill to regulate the practice of veterinary medicine and surgery. After some slight changes, the bill was accepted as corrected.

It was moved and seconded that the Secretary be instructed to send out to the members each year a printed and corrected list of the members. Carrried.

Adjourned to 7 P. M.

The society was called to order by the President at 7.30 P. M.

On motion Drs. Scott, Clark and Laws were appointed to present the claims of the veterinary bill before the legislature.

None of the essayists being present the society proceeded to the report of cases. Arguments followed in regard to the conditions after death from lightning.

Dr. Roub reported a case of cerebo-spinal meningitis, which brought out a general discussion.

Moved and seconded that Dr. Clark be allowed the privilege of bringing his class before the society during the reading of the essays. Carried.

The election of officers resulted : President, Dr. J. P. Laws, Madison ; Vice-President, Dr. J. R. Kelso, Baraboo ; Secretary, W. G. Clark, Beaver Dam ; Treasurer, C. H. Ormond ; Milwaukee ; Censors : J. F. Roub, Monroe ; T. W. Watson, Chippewa Falls ; and G. Ed. Leech, Milwaukee.

Moved by Dr. Leech, and seconded by Dr. Laws, that the Secretary be allowed his annual dues and railway fare to and from the association meetings for his services. Carried.

On motion the society adjourned until 10 A. M., Feb. 7th.

SECOND DAY—MORNING SESSION.

The society was called to order at 10.30 A. M., Feb. 7th, by the President, Dr. Laws.

Minutes of the last meeting were read and adopted.

Moved by Dr. Leech, and seconded by Dr. E. D. Roberts, that the society hold the semi-annual meeting at Chippewa Falls on the second Wednesday in August, 1895. Carried.

A resolution was introduced by Dr. Leech to control the society in the matter of the appointment of State Veterinarian. On motion the resolution was laid on the table until the next annual meeting.

On motion the following resolution was adopted : *Resolved*, That the society instruct the secretary to request the Governor to create a sentiment in favor of the appointment of a veterinarian on the State Board of Health.

The society then adjourned until 2 P. M.

SECOND DAY—EVENING SESSION.

The society was called to order by Dr. Laws at 2 P. M.

Moved and seconded that the central portion amended as follows: That the Secretary be instructed to ascertain the cost of a gold button of that kind, and report at the next meeting. The original motion was then carried.

The names of Christmas Evans and Richard Kuoni were proposed for membership, and were referred to the Board of Censors.

The Censors reported favorably on the applications. It was moved and seconded that the names be accepted by the society for membership. Carried.

An interesting paper was then read by Dr. David Roberts, subject "Ergotism in Cattle," giving the symptoms and lesions in an outbreak appearing in his practice. It was followed by a spirited discussion of the disease. On motion the essayist was excused.

Moved by Dr. Leech, and seconded by Dr. Arpke, that the members on the programme, and not reading papers, be requested by the Secretary to read their papers at the next meeting. Carried.

On motion a vote of thanks was tendered to the essayist.

The society then adjourned until the second Wednesday in August, 1895, at Chippewa Falls.

W. G. CLARK, *Secretary*.

VETERINARY MEDICAL ASSOCIATION OF NEW YORK COUNTY.

The regular meeting of the Veterinary Medical Association of New York County, was held at the New York College on Tuesday, May 7, 1895, at 8:30 o'clock, with the President, Dr. Huidekoper, in the chair.

On roll-call the following members responded to their names, viz.: Drs. Bretherton, Caulfield, Dickson, Delaney, Ferster, S. S. Field, H. S. Field, Giffen, Gill, Glover, Huide-

koper, Hanson, Lellman, Machan, Neher, Ryder, Richards, Sherwood, Sielman, Turner, Wolters and Wellner.

The minutes of the last meeting were read and adopted.

The chairman of the Board of Censors reported favorably the name of Dr. M. O. M. Knott, a graduate of the New York College of Veterinary Surgeons, vouched for by Drs. Giffen and Delaney.

The resignation of Dr. Liautard, which was laid over at the last regular meeting, was then taken up, and it was moved by Dr. Field that the same be accepted, seconded by Dr. Giffen, and carried.

Papers being next in order, Dr. Ferster read a very interesting paper on "Horse-shoeing," giving many practical points upon the art.

REPORT OF COMMITTEES.

Judiciary Committee.—Dr. Giffen reported as follows :

The Jury bill had passed both houses and had been signed by the Governor.

The bill granting an opportunity for non-graduates to register had been killed in the Senate.

The Regents bill had passed the Assembly, and would be up for third reading in the Senate during the present week.

Moved and seconded that the report be accepted. Carried.

Moved and seconded that the expenses incurred by Drs. O'Shea and Huidekoper for their good work at Albany be allowed them. Carried.

Committee on Certificates.—Reported progress.

Committee on Revision of Constitution and By-Laws.—Dr. Hanson, acting chairman, made the report for the committee. It was then moved and seconded, that each article be taken up separately and acted upon. Carried.

CONSTITUTION.

Amendment :

Art. IV. The annual election shall take place in the evening of the first Tuesday of December. Adopted.

BY-LAWS.

Art. VI. A Board of Censors shall be elected by the members at each annual meeting. Not adopted.

Art. VII.

1. Charter Members.—All those practitioners of veterinary medicine who were present at the first meeting, to assist in the organization of the above association, etc. Adopted.

2. Future Members.—Applicants for membership shall submit their names upon one of the association's application blanks, duly vouched for by two members of the association. The initiation fee shall accompany such application, which is returnable should he not be elected to membership. Adopted.

3. A two-third vote will be necessary to constitute an election to membership. Adopted.

Art. VIII. A member elect shall pay to the treasurer his annual dues, which shall be five dollars (\$5.00). Adopted.

Art. XIII. The association shall meet upon the first Tuesday of each month, except during July, August and September ; election, falling on a Tuesday, the meeting will be held the following Thursday. Adopted.

Art. XIV. The Judiciary Committee shall consist of five members elected at the annual meeting. Not adopted.

CODE OF ETHICS.

Art. II. No member shall endeavor to build up a practice by undercharging his brother member. Adopted.

Committee on Charges.—Reported progress.

ELECTION OF MEMBERS.

Moved and seconded that the by-laws be suspended. Carried.

Moved and seconded that the Secretary cast a ballot for Dr. Knott. Carried.

Dr. Knott was then declared a member of the association.

NEW BUSINESS.

Moved and seconded that the constitution and by-laws be printed as adopted. Carried.

Moved and seconded that a committee of five be appointed as a reception committee for the State meeting to be held in this city in September next, to report at the next meeting. Carried.

Meeting adjourned.

J. E. RYDER, D. V. S., *Secretary*.

NEW HAMPSHIRE VETERINARY MEDICAL ASSOCIATION.

On May 7th, veterinarians of New Hampshire met in the Eagle Hotel, Concord, and organized a State Veterinary Association.

The constitution and by-laws were signed, having been framed and accepted at a previous meeting in April. Officers for the ensuing year were elected as follows:

President, W. I. Russell, Nashua ; Vice-President, J. Hart, Concord ; Secretary, L. Pope, Jr., Portsmouth ; Treasurer, A. Fabbott, Manchester ; Executive Committee, Drs. L. E. Tuttle, Franklin Falls ; A. L. Dodge, Manchester ; R. J. Macguire, Concord.

L. POPE, JR., *Secretary*.

KEYSTONE VETERINARY MEDICAL ASSOCIATION.

The monthly meeting of the K. V. M. A. was held at the office of Dr. W. Horace Hoskins, No. 3452 Ludlow Street, Philadelphia, Tuesday evening, May 21st, having been postponed from May 14th.

The meeting was called to order by President Lintz. Then followed roll call, reading and adoption of the minutes of the previous meeting and committee reports, during which it was learned the bill to establish a State Board of Veterinary Examiners needs but the Governor's signature to become a law. And on motion President Lintz appointed Drs. Hart and Rhoads a committee of two to confer with the State Association to encourage the appointment of men on this board who were willing to make some personal sacrifices in the interest of the

profession, and not men whose sole aim and object is self aggrandisement and personal advancement, and their only claim or hopes of obtaining it is political influence.

The meeting adjourned to meet at Lansdowne June 11th, where they will be entertained by Dr. Rhoads.

W. L. RHOADS., *Secretary.*

REPORTS OF CASES.

"HEART DISEASE IN THE HORSE."

Heart Failure Brought on by Overwork In a Horse Suffering from Chronic Endocarditis

By J. A. COUTURE, P. S., Quebec, Canada.

On the 26th of July, 1894, about 8 P. M., arrived at my hospital a brown mare, 1150 pounds, 5 feet 3 inches, the property of James Ryan Carter, of this city, and used since many years on a cab weighing about 1000 pounds. I must say that this city is very hilly, and, notwithstanding this disadvantage, everybody who owns a horse likes to drive fast. Carters with their heavy traps, weighing sometimes, when loaded with four or five people, 1600 or 1700 pounds, are renowned for their fast driving.

This mare is high spirited generally and very wicked, being nympho-maniac. When approached she tries to bite and strikes both with fore and hind legs. Her pathological antecedents are insignificant, having had, since five or six years, only two slight attacks of indigestion.

The 24th of July she shows no signs of sickness; the 25th she is less spirited, has an occasional cough and her respiration is easily accelerated, the appetite has diminished.

The 26th she refuses her morning ration of oats, but takes her hay. She is dull all day, but she works all the same; frequent cough. At night she refuses all food and is brought up to the hospital.

Symptoms.—Temperature 103, respiration 45, pulse small,

filiform, irregular, three or four pulsations in rapid succession, followed by an absence of pulsations lasting three or four seconds; at times it is almost insensible, extremities cold, great weakness. She is handled, auscultated, punched, etc., and kept quiet all the time. When in health she would have reacted with much violence.

Auscultation.—Respiratory murmur is present in every part of both lungs. Beatings of the heart are heard equally well on both sides of the chest, there is a *murmur* (bruit de souffle) with first shock (septolic murmur), which can be heard at the base of the heart and on both sides of the chest.

Diagnosis.—Heart failure, brought on by overwork when the mare was suffering from chronic endocarditis (insufficiency of mitral valve) and hypertrophy of the heart.

Treatment.—Perfect quietness; alcohol two ounces; strong infusion of coffee, one pint to be given at once, the coffee to be repeated every two hours.

The following was also given: Powdered Digitalis, fifteen grains; potassium sodide, two drachms. Mix, and to be given one hour after the alcohol.

July 27th, at 10 A. M.—Temperature and pulse normal, respiration 15. Extremities warm, appetite good; her natural temper has returned and she is now able to defend herself with all her might.

July 28th.—She returns to work.

BIBLIOGRAPHY.

Exercices de Chirurgie Hippique à Alfort. (Exercises of Equine Surgery at Alford.) By Prof. P. J. Cadiot. (Asselin & Houznan.)

If the veterinary student is made acquainted while at school with all the surgical operations which he may be called upon to perform when he is once in practice for himself, there are a few which he will meet oftener than others and which are, so to

speak, regular classical operations. Such are those that Prof. P. J. Cadiot has gathered in the little neat volume issued by Asselin & Houznan. It is an excellent work which is extensively illustrated, and which will give to the reader a most interesting and instructive pastime, for though it may be Alforian, it is universal in its usefulness.

Neurotomie Mediane. (Median Neurotomy.) By Mr. C. Pellerin. Asselin & Houznan, Paris.

A little pamphlet of some 60 pages in which the section of the median nerve is recommended in the treatment of chronic affection of the tendons of the fore leg and in periostosis of the cannon with the presentation of 20 observations where the treatment has applied with a result of one failure, six improvements and fourteen recoveries.

PEROXIDE OF HYDROGEN.—*Free of Charges.* The therapeutical applications of Peroxide of Hydrogen (medicinal), Glycozone and Hydrozone, by Charles Marchand, Chemist. Ninth Edition.

This book of 200 pages, which contains all information on the subject, with reprints of elaborate articles by leading contributors to medical literature, will be mailed to doctors mentioning this publication.

Send full address to Charles Marchand, 28 Prince Street, New York.

EXTRACTS FROM FOREIGN JOURNALS.

PROLAPSUS RECTI IN A SOW.

BY M. J. GUITTARD.

A sow 15 months old, after a night of laboring pains, ending in the presence of a litter of 13 little pigs, presented the next morning a large prolapsus of the rectum, which protruded as a mop of dark red brownish color, and which was increasing at every effort of the animal. By careful manipulation

it was with difficulty replaced, and constant irrigations of cold water applied upon and inside of the rectum. By degrees the efforts of the animal subsided and the retention remained perfect. But it required five hours of that continued treatment to obtain the result.—*Progress. Veter.*

EVERSION OF THE VAGINA AND OF THE BLADDER.

BY M. J. GUITTARD.

A three-year-old cow has a prolapsus of the vagina about the size of a man's head. If attempts are made to reduce, the animal resists, struggles and makes violent efforts, which have a tendency to increase the difficulty. The bladder is largely intended and cannot be emptied. The animal is then thrown down, and with her four legs secured together, she is put on her back. In this position the bladder returns to its normal place, the urinary matter is free, the urine escapes, and by degrees the tumor diminishes, and the reduction completed by moderate pressure.—*Ibid.*

OBSTRUCTION OF THE ŒSOPHAGUS.

BY M. J. GUITTARD.

One of those masses, as large as the fist, spheroid in form but somewhat flat, was found at the post mortem of a steer located in the Œsophagus in its thoracic portion. The animal, which had been treated by an empiric, had presented all the symptoms offered in cases of Œsophageal obstruction, with symptoms of central pleuro-pneumonia, with dullness on percussion, crepitant moist râles &c. On exploration with the probang, the presence of the foreign body has been detected, but the instrument afterwards slipped into an empty space as in the pleural cavity. This was due to a rupture of the Œsophagus made by the empiric, who had tried to displace the foreign body with a long flexible stick.—*Ibid.*

FŒTAL DYSTOKIA.

BY M. R. MERIT.

The author was called to a cow, in labor for several hours. Exploration revealed a dead foetus, in the posterior presentation, lumbo-pubic position, of very large size.

To his great surprise, the version of the foetus is very easy, and the lumbo-pubic position becomes lumbo-sacral. The two hind legs are secured and traction made by two strong and intelligent assistants, which brings the foetus' hind quarters into the pelvis; but these cannot be drawn any further. By manual exploration, the hand passes freely round the croup of the foetus, but its abdomen presses against the pubis of the mother. Supposing a case of abdominal dropsy, the walls of the abdomen are freely incised to allow the fluid to escape. None comes out. The hand reintroduced to extract the intestines brings instead portions of a tumour, glandular in aspect, very large, which removes by pieces; weighs when these are gathered together about 16 pounds.

The foetus then is removed, which is found with a fracture of the vertebral column at the last dorsal vertebra, with another large bloody tumour as the first, though smaller, and the left kidney totally absent.—*Ibid.*

DYSTOKIA DUE TO DROPSY OF THE FŒTAL KIDNEYS.

BY MR. HERMENIER.

A cow in labor makes violent efforts to expell her foetus. The anterior legs, as well as the head, are out protruding through the vulva. The calf had died a few minutes after their first apparition. Manual examination reveals the calf in normal position, but with an enormous abdomen, supposed to be dropsical. Forced extraction fails and hysterotomy must be performed. The left fore leg is removed, and through an opening made to the chest, the heart and the lungs are removed. The diaphragm is torn and presents numerous calcareous con-

cretions in its structure. From the abdomen is extracted an enormous liquid mass, which readily bursts open. It was one kidney—the other was removed in the same way. Both together were about four times the size of a man's head. The tissue of the organs was all destroyed and what little remained of it shows the malpighian bodies of the size of a marble. Both kidneys contained about fifteen quarts of liquid.—*Ibid.*

• A CASE OF DIAPHRAGMATIC HERNIA.

BY F. T. STANLEY, M.R.C.V.S.

On the evening of Tuesday, the 5th ult., a mare belonging to the Brighton Railway Company showed signs of abdominal pain whilst at work. She was brought home at once and was apparently relieved of all pain by 10 P. M., after the usual treatment by antispasmodics and stimulants.

I was sent for next morning as the mare "was not so well." I found her standing and violently shivering. The pulse was hard and quick, the extremities cold, and attempts to move the mare gave indications that she was sore all over. My diagnosis was—internal rupture, but I applied mustard and vinegar to the limbs and body, had her clothed and bandaged and gave powerful stimulants. I failed, however, to get any reaction, and informed the manager that the case was hopeless. On visiting her again in the afternoon she was moribund, but did not die till the morning of the 7th.

A post-mortem examination disclosed a rupture about two inches long in the lower part of the diaphragm, through which about two feet of small intestine had passed into the thorax. On opening the chest the strangulated portion of intestines was found discolored and detached. Possibly the separation occurred on removing the contents of the abdomen, but even if it did not occur during life the condition is a novel one.

I think it is uncommon not to have had any sign of abdominal pain during the whole of the 6th. As a rule, death from strangulated intestine is preceded by six or eight hours of

death-like coldness and freedom from pain, but my experience does not include such a long period as twenty-four hours.—*Vet. Rec.*

A MALLEIN FATALITY.

One day last week a friend of mine injected with mallein a black horse, to decide the question of any possible glanderous infection. The horse died suddenly next morning and a post-mortem examination showed no signs of glanders. Is this a coincidence or is it cause and effect? M.R.C.V.S.

[We publish this case because we believe it can only be a coincidence, but such an event is one which might be very disagreeable to a practitioner. We know no similar occurrence, and without many more details can only say that the case is unique.—ED.]—*Ibid.*

SUNDRIES AND ITEMS.

NON-IMMUNIZED SERUM.—According to Dr. Bertin, of Nantes, the serum of non-immunized horses has the same value in the treatment of diphtheria as that of the immunized animal. Six cases of the disease treated with it have given five recoveries and one death.

DRUMMING TRADE.—To think that after the progress made in the last thirty years by Veterinary Medicine in the United States, such as the following should be yet met with, as a circular sent to owners of horses:

Dear Sir:—In consideration of my extensive establishment, both in the city and country, with all the modern improvements, which surpasses all of its kind in this country, I take great pleasure, as a QUALIFIED Veterinarian, in soliciting your patronage.

I give professional care, board and medicine at the hospital for one dollar per day, or twenty-five dollars per month. Veterinary dentistry a specialty.

Services rendered day and night. Hospital never closed.

Professional calls made at owner's stables, anywhere in the city, at one dollar per visit.

Ambulance calls answered night and day.

Special contracts made with firms to care for stock by the year, with any number of horses.

Pet dogs cared for and boarded at the hospital. Terms moderate.

Horses boarded winter and summer at my ——— Farm, with professional care and medicine given, at ten dollars per month.

Invalids hauled to steamboats in ambulance free of charge.

For further information, I would be pleased to have you call at the ——— Hospital, Nos. ——— Avenue.

See advertisement in *Sunday American*.

PREPARING THE ANTITOXIN.—On October 12th, the Pasteur Institute possessed for immunizing purposes a stud of twenty horses. This stud has now been increased to one hundred and thirty-six horses, a total that will probably be ultimately increased to the maximum of 150. Fifteen of these animals are at the State Veterinary School of Alfort, where they are kept under close observation (with regard to pulse, temperature, etc.), by Professor Nocard and his pupils. Forty-two horses are located in the old abattoirs of Grenelle placed at M. Roux's disposal by the Municipal Council of Paris. Of these, twenty are kept by the municipality at a cost of 20,000 francs (\$4,000) a year for the benefit of the Paris hospitals and poor. At Villeneuve-l'Étang—a property ceded by the State to M. Pasteur in 1886—there are seventy-nine horses cared for by a capable veterinary surgeon and his staff. While the regulation six litres of blood (yielding about half that quantity of serum) are being drawn from the jugular vein, the animal's attention is easily distracted by a

handful of carrots, which he munches contentedly. On the day following the phlebotomy immunization is recommenced and continued for five days. A rest of fifteen days follows, and then another bleeding may be practiced. That the animals flourish under this *regime* of good feeding and periodical bleedings is proved by the presence in good health at Alfort of a sturdy Brittany pony which has hitherto supplied no less than four hundred and twenty litres of blood.

HORSE MEAT AND SAUSAGES.—In an article entitled *Chronique de l'hygiene*, which appeared in the *Union Medicale* for February 16th, M. Jules Rochard calls attention to a report communicated by M. Nocard to the Paris sanitary authorities on the question of horse meat in sausages. M. Nocard had been empowered by the prefect of police to examine into a complaint put forward by a syndicate of the pork butchers of Paris, in which it was suggested that the venders of sausages made from horse meat should be obliged to attach a special label to the sausages indicating their nature. At that time, says the writer, there were no means by which horse meat could be distinguished from that of other animals, and M. Nocard, thinking that it was useless to lay down any measure that would receive no practical support, simply advised the prefect of police to redouble his care in the supervision of the abattoirs and of the inclosures where horses were slaughtered. Now, however, a simple and practical method has been discovered by M. Edelman and M. Brautigan by which this meat may be distinguished from that of other animals, even when it is mixed in very small quantities with the other meat.

This question, says M. Rochard, is an important one, for the consumption of horse meat is gradually increasing. In 1892 16,483 horses, 206 donkeys, and 43 mules were slaughtered. All this meat is not sold in the 120 butcher shops which actually exist in Paris for the sale of horse meat alone, but the choice parts are sold, and the rest is cut up into sausage meat. This new industry is not attended with any danger in Paris, because the abattoirs, the shops, and the factories are under the constant

supervision of competent veterinary surgeons ; but in the suburbs and in the provinces such supervision exists in name only.

On the other hand, says M. Rochard, if sausages made from horse meat may be eaten in Paris without any danger arising from their consumption, the manufacturers who sell them without indicating their true nature deceive the public and carry on a dishonest competition with the pork butchers. For this reason, says the writer, it is fortunate that such a practical and sure method has been discovered whereby this deception may be revealed.

The method consists in treating a bouillon which is obtained from the suspected product with idolized water. If it contains horse meat, no matter how small the quantity, a peculiar violaceous reddish-brown color will appear. The experiments made by M. Edelmann and M. Brautigan have been tested and verified in M. Nocard's laboratory and under his personal supervision. The procedure is easy and does not call for a complicated outfit, the description of which may be found in M. Nocard's report to the board of health which appeared in the *Compte-rendu des seances du Conseil* for February, 1895. This report ends with the statement that the board of health voted, without discussion, that the manufacturers of sausages made from horse meat should attach a special label to the sausages indicating their true nature. (*Medical Record*).

FOOT AND MOUTH DISEASE ATTACKING HUMAN BEINGS.—A cablegram announces that physicians throughout Europe are somewhat apprehensive of the spread of what is described as the human form of the foot and mouth disease, which has been, for a considerable time, prevalent in Berlin. Specialists who have investigated declare that the bacteria are identical with those of cattle suffering from the complaint. They report the pestilence as dangerous, and say it is causing frequent deaths among human victims. Professor Virchow and a committee of the Berlin Medical Society are making an investigation of the milk, which is said to be the usual vehicle of the contagion. (*Medical Record*).

AMERICAN VETERINARY REVIEW.

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NOTICE.—Please address all communications regarding matter for publication, books for review, exchanges, etc., to the Editor, 139 and 141 W. 54th St., New York.

EDITORIAL.

VETERINARY EDUCATIONAL PROGRESS (?) IN NEW YORK STATE.—During the past hundred years the science of veterinary medicine and surgery has struggled against the odds of superstition, charlatanism and prejudice with a heroism that was entirely worthy of so just and noble a cause. Especially has this been the case in the English-speaking countries, where governmental assistance has been almost entirely withheld, and the self-denial and devotion to principle have been more marked than in any other land where it is now known. In America the birth of true veterinary medicine has been an event of such recent occurrence that most men of mature years can recall it with all the details of its gigantic progress from infancy to the state in which it exists to-day. Those who have taken part in the great battle for recognition as one of the advanced sciences have marveled at the wonderful growth of its ranks numerically; they have been amazed at the rapidity with which new educational institutions have sprung up for the special training of young men for the important duties that are constantly opening up to them, as well as the establishment of special chairs in the great universities and colleges for special or supplementary instruction in the new science that has been awakened in this country.

They have been impressed as well by the public appreciation of the merits of the scientific veterinarian, who has forged forward until by the very force of his qualifications and his manifest benefit to humanity through the domestic animals he now occupies positions of trust and confidence in national, state, county and municipal governments. And the profession as a whole has steadily endeavored to make itself more worthy of this appreciation of its merits; and scarcely a year has passed when some act is not recorded to make the educational standard higher, and the requirements for obtaining it more stringent—to the end that better men have sought to become members of it, and their education has been broadened and made more thorough. Every school has gradually and voluntarily added to its curriculum, and most of them have lengthened the course of attendance by one-third. To tighten the lines upon those schools which still adhere to a short course the National Association has refused her fellowship to their graduates.

The Empire State has always lighted the way to every important advancement, and the profession of the country looks to her for any new departure for the good of all. And she, ever restless for some new step that will carry the profession forward, has recently taken a most important action of a legislative nature, whereby the legalizing of new graduates from the various colleges is to be taken out of the hands of their faculties and placed in the custody of the Board of Regents of the State of New York, who will appoint an Examining Board of Veterinarians selected from prominent practitioners, who will perform their services in a perfectly disinterested and unbiased manner. It was thought by this means that all suspicion of favoritism or commiseration for unfortunate circumstances would be avoided; that the different colleges, spurred by competition, would strive harder to give her pupils a more thorough training, and that in this way it would redound to the good of the whole profession of veterinary medicine.

This law has been passed and signed by the Governor. Whether the spirit of the statute, as understood or meant by

its promulgators is to be carried out, remains to be seen. Certainly, the very first step taken to carry out its provisions does not augur well for the future of the profession in this State. The Board of Regents was empowered to secure an unbiased examining board of veterinarians, and they very properly applied to the official representative of the profession in the Empire State, and so the New York State Veterinary Medical Association was asked to nominate ten members of the profession, from whom five would be selected to compose this most important and disinterested body of examiners. In another column of *THE REVIEW* we present an official report of a special meeting of this society, called for June 11th, for the purpose of carrying out the provisions of the act of the legislature. One of the plainest propositions to those who had contemplated the new law was that certainly no member of the faculty of any school whose pupils are to compete for the diploma of this Board had any moral right to a place upon it. A teacher in one college has no business to examine the students of a rival institution in competition with his own. Even if he were absolutely fair and honest, and unbiased by personal acquaintance with the candidates coming from his own school, their competitors are placed at a great disadvantage, in that his method of teaching is foreign to them and familiar to his own. It is then manifestly not an unbiased board. It is retrogressive, and the profession would by this means take a stride backwards that would more than undo the greatest achievements of years of struggling.

But, incomprehensible as it may seem, this is just what has been done by that special meeting of the New York State Veterinary Medical Association. It renders the whole law not only farcical, but it destroys harmony, generates discord, and invites unfairness and dishonesty. Worse than all, the State Society, in placing in nomination representatives of different schools, have done so deliberately, and after discussion of the subject. It matters not that there was present at this meeting but a handful of members; and it matters not that it was resolved to exclude teachers from this list, and then, after recess, rescinded that resolution before certain opponents of it

had returned to the hall—the mischief was done legally, and it should be at once undone. If the members responsible for this great wrong to the veterinary profession of America cannot see that they have blundered, and will not recall their action, then the rank and file of the profession should at once acquaint the Board of Regents of those names which represent schools, and certainly the Regents will recognize the fact that they have no business to be examiners. It matters not that every school is represented in the list; that none are slighted. It is wrong, all wrong; and should be undone, before incalculable injury is inflicted on the whole body of young men now preparing to enter an honorable and noble profession.

TO OUR SUBSCRIBERS.—In the July number of the REVIEW we alluded to the difficulties this periodical had experienced in having passed through the hands of a firm which had become financially entangled; and how we had again secured control of it absolutely. In starting it off again upon a new basis every subscriber was asked to also begin afresh, and renew his subscription just as though the paper had never existed. In that issue we made a simple but positive proposition, which was, in substance, that we asked the suffrage of the American veterinary public: if they wished THE REVIEW continued as heretofore they were to send in their subscriptions at once; if they did not, we would cease its publication. By this means it was thought that an issue would be forced and an answer received that would be decisive and immediate. The result has been obtained. The profession has spoken most emphatically, and in no uncertain tones. The large subscription list which we received from the defunct publishing house—the list was all we got, not a cent in money—was thus appealed to, and it has responded by sending in more *bona fide* subscriptions than we had expected in our most hopeful mood. With the actual subscriptions we have received many personal letters asking that the REVIEW, ever the true organ of the American veterinary profession, be by all means continued as in the past, and many pledging it their hearty co-operation. It is pardonable, then, in us, if we

indulge in this article a little further upon business matters. We have said the response to our notice has been generous—beyond our expectations—which is true. Of course, in a large list of subscribers, some have not responded. We take this last opportunity to say to all such that the August number will be mailed to their address, after which, unless we receive a notification that they wish it continued, accompanied by three dollars to pay for one year's subscription from April, 1895, the REVIEW will cease to be sent to them. As we stated in that July number, this journal is not published to make money: but we cannot afford to lose it continually. We have received sufficient subscriptions to place it upon a self-sustaining basis; but we do not intend that those who have so cheerfully signified their approbation shall do so for the benefit of others who have shown themselves neglectful or indifferent.

After this, we trust it will be unnecessary to burden our readers with business matters. But we emphasize the purport of this notice: *To all who have not paid their subscriptions beginning April, 1895, the REVIEW will cease to be sent after the August number.*

UNITED STATES VETERINARY MEDICAL ASSOCIATION.—By the time another issue of the REVIEW shall have reached its readers, veterinarians from almost every state in the Union will be upon their pilgrimage to the great Northwest, whither they will be journeying to attend the thirty-second annual meeting of the United States Veterinary Medical Association, which meets at Des Moines, Iowa, in September.

From all indications the approaching meeting will be the largest numerically, most national in character, and most important from an educational standpoint that has occurred since the organization of the association in 1863. The centrality of the place of assemblage will insure the attendance of a very large number of members who otherwise could not or would not visit the annual conclave, chiefly for the reason that heretofore the distance has been so great, and the length of time required in going to and fro so exacting as to render it impracticable for them to so long absent themselves from

their practices. All practitioners who take any degree of interest in their profession necessarily would very much like to enjoy the intellectual and social pleasures which the meetings of this association always afford; and they will avail themselves of it if they can do so without too much sacrifice. Democratic principles include the time-honored aphorism, "the greatest good to the greatest number;" and, therefore, it appears to be the wisest plan always to select that point which will be most accessible to the largest number of members—some centrally-located Western city, rather than the extreme East or the extreme West. While no doubt the journey from New York, Philadelphia and Boston across the continent to San Francisco is one round of picturesque pleasure; the reception and entertainment by the association members at the Golden Gate the acme of good fellowship and hospitality—still, but few of the members residing in the former cities could spare the time and money necessary to make such a trip; and, *vice versa*, veterinarians of the Pacific Slope cannot and do not come to the extreme Eastern meetings, so that the wisdom in selecting Des Moines for this year's convention is manifest, and the experience of the coming session may do much toward deciding the next topographically-accessible place of meeting. The reputation of the Des Moines veterinarians for hospitality is a sufficient guarantee of the heartiness of the welcome which awaits the hosts who are to assemble there.

Adaptability of location is, then, a most important factor, standing next only to the work that is accomplished at these meetings. From the imperfect programme now at our command, there appears to be no lack of material for the intellectual delectation of those who are so fortunate to be able to be present; and it is to be furnished by some of the brightest minds in the association. Papers are promised by such men as Schwarzkopf, Williams, McLean, Butler, Trumbower, Harger, Huidekoper, Reynolds and Niles, and as the list always increases as the time for the meeting approaches, we may be sure of even a more extended programme.

To this array of names may be added important discussion,

As many of the subjects will embrace questions of sanitary economy, which are of the greatest moment to the profession in America of to-day. Educational problems will undoubtedly engage their deliberate consideration; and as so much good is flowing from their agitation of this question for the past few years, every member is alive to its necessity and exhilarating influences.

Every American veterinarian who can should attend; those who are not members should without delay connect themselves with it. Those from the East are insured an especially pleasant trip, as it is proposed to have a special car at the disposal of the Eastern party, which will leave Philadelphia about Sept. 7th, and special transportation rates have been arranged with the Baltimore & Ohio Railroad, which insures the best of service.

MASSACHUSETTS LAWS.—Through the courtesy of Prof. Dsgood, of Harvard University, who is chairman of the Cattle Commission of Massachusetts, we have received the laws for 1895, relating to the control of contagious animal diseases in that State. The completeness of the regulations certainly bids fair for the systematic examination and control of those diseases in every part of the commonwealth.

ORIGINAL ARTICLES.

VETERINARY OPHTHALMOLOGY.

Specially Written for the American Veterinary Review by J. A. COUTURE, P. S.,
Quebec.

FIRST CASE.

THE SO-CALLED PERIODIC OPHTHALMIA OF THE HORSE—REPEATED ATTACKS OF IRITIS, CAUSING INTERNAL OPHTHALMIA, COMPLICATED BY CATARACTS, ATROPHY OF THE RETINA, DEPOSITS IN THE VITREOUS BODY.

History.—The patient is a three-quarter bred mare, owned by Capt. Turner, of Queen's Own Hussars, at Quebec. She

is 7 years old, 16 hands, and is used mostly as a saddle horse. She was bought in January, 1893, and was passed as sound by a veterinary surgeon. In the course of the summer of 1893 she suffered from what the veterinary surgeon called scarlatina and la grippe. In August of the same year she had her first attack of periodic ophthalmia; it affected the left eye. She was apparently well after a couple of weeks. From that time she had attacks of the same affection every four or six weeks, the disease changing from one eye to the other. In the spring of 1894 she was shown to a human oculist who, after a superficial inspection, declared that there was nothing serious, and prescribed a weak solution of carbolic acid to the eyes. The patient was brought to me for the first time on December 15, 1894. She was suffering from one of her attacks.

Clinical Examination.—She is in good condition, pulse and temperature normal. The right eye is much inflamed, weeping, photophobia, very painful to pressure. There is a greyish white deposit opposite the pupil so that the latter is hardly visible. With close inspection it is seen contracted, elliptic in form. When a lighted candle is passed before the eye, only one light is reflected, showing that the deposit exists in the anterior chamber. It is found impossible to examine that eye with the ophthalmoscope, as the eyelids are closed the moment the rays of light are directed into the organ.

Diagnosis.—Iritis of specific form.

Prognosis.—Doubtful. I will examine the patient with ophthalmoscope as soon as possible, and will then give a definite opinion.

Treatment.—Obscurity, warm fomentations to the eye, solution of cocaine (5 per cent.), three drops placed in the eye every 6 hours; solution of atropin (1-250), three drops in the eye every 6 hours. Frequent applications of following collyrium: Corrosive sublimate, alcohol, (100), distilled water, (900).

A fortnight after all inflammation has disappeared, so has the deposit in anterior chamber. The patient is then thoroughly examined so as to enable me to make a correct and definite diagnosis and prognosis.

Right Eye.—Superficial examination shows already that the pupil is contracted considerably—elliptic; the eye is sensible to the light and eyelids are partly closed when exposed to bright natural light. When a lighted candle is passed before the eye two lights are reflected, indicating that the cornea and anterior surface of crystalline lens are transparent. Examined obliquely with or without No. 2 lens the iris is seen adherent (synechiæ) to the crystalline lens, dark-colored deposits are seen at two or three places, they are fixed, immovable; they belong to the crystalline lens. Other deposits of same color are seen fixed, immovable at one end and the other end moving to and fro, as the limb of a tree shaken by the wind. These belong to the vitreous body. Examined with the ophthalmoscope, the above alterations are much more visible, but these deposits prevent the rays of light to penetrate sufficiently the transparent parts of the eye to see the bottom of the organ. We only see the dark red shadow, but the details escape investigation.

Diagnosis and Prognosis.—Formation of a cataract, disease of vitreous body, and probably choroiditis with gradual atrophy of retina; actual partial blindness, with great tendency of aggravation and complete blindness as final result.

Left Eye.—Superficial inspection shows pupil dilated to its extreme limit, immovable, the light of an ordinary No. 10 electric lamp directed suddenly into the eye causes no effect on pupil. A lighted candle passed before the eye shows two reflected lights so that the cornea and anterior surface of crystalline lens are transparent. Examined obliquely, with or without No. 2 lens, the same alterations of the crystalline lens and the vitreous body are observed as in the other eye, but larger and more numerous. The ophthalmoscopic examination has no better result than with other eye, only a shade of the choroid being perceived. The cornea seems insensible, and to test it, a piece of paper is carefully applied, avoiding the lashes, and made to touch the cornea; no sign of sensibility is evinced. In order to further test it, 6 drops of solution of eserine (1-25) are placed in the eye three times a day during five days. If the eye is not paralyzed, the pupil

should contract; but in this case the eserine had no effect whatever.

Diagnosis and Prognosis—Paralysis of the eye, the result of atrophy of retina as a consequence of choroiditis (internal ophthalmia), the first cause being these various attacks of specific iritis. Formation of a cataract and of deposits in vitreous body. Incurable.

The patient has had no other attack of iritis since Dec. 12, 1894, and she is used every day as saddle horse.

This case is interesting because it shows the terrible alteration brought on by the disease, and specially because it confirms the opinion of Dr. Rolland and Dr. de Metz that the so-called periodic ophthalmia is nothing else than the inflammation of the iris (iritis). I have in my notebook a few other cases that tend to confirm this opinion, and which will be published in due course of time in THE REVIEW.

PNEUMONIA.

By R. B. PLAGEMAN, D.V.S., Brooklyn, N. Y.

Pneumonia is a general disease, no local product; the inflammation of the lungs is only the leading symptom. The phenomena of the disease cannot be explained by the local affection. This assumption of a specific germ or germs is necessary. Pneumonia bacillus (Friedlander); pneumoni coccus (Frankel). Pneumonia belongs then to the group of infectious diseases.

According to Weichselbaum, the bacteria found in the different pulmonary inflammations are to be regarded as the cause. The conclusion is completely justified on the following grounds: Definite, well-characterized species of bacteria not only occur constantly in acute pulmonary inflammation but can be demonstrated in greatest abundance and activity in the earlier stages of this inflammation. They have been isolated and cultivated, and when introduced into the system have produced processes which, taking them *in toto*, correspond to inflammation of the lungs.

The pneumonia virus is no unity, inasmuch as pulmonary inflammation can be produced by different kinds of bacteria.

From experiments of Friedlander and Frankel it is obvious that pneumonia is associated with more than one pathogenic germ. The separation of pneumonias into croupous, purulent, and lobular, has an anatomical but no etiological significance.

During the course of pneumonia micrococci may be found not only in the lungs, but also in the blood, kidneys, liver, spleen, and in fact nearly all the tissues of the body.

There can be but one etiological explanation of the disease: Pneumonia is the harvest of the seed sown. It is not probable that the various predisposing causes, such as cold, exhaustion, and debility lower the vitality and render the animal susceptible, thus changing the character of the tissue soil, so that the virus can grow and produce its specific effects.

This brings us to the time-honored prejudice in favor of cold. Horses shiver when they are cold, and often shiver prior to pneumonia, hence the conclusion that cold is the cause of pneumonia; but cold can no more generate pneumonia than it can glanders or farcy, if it is due to microbic infection. A horse with pneumonia may really be more ill with a low temperature than when he has the maximum pyrexia usually manifested in this disease. The question of the two great classes of antipyretics, those which act directly on the thermogenic centres, those which merely reduce the surface temperature and prevent the accumulation of heat within the organism suggest themselves. Now, I contend that by the exhibition of drugs of the antipyretic class in doses large enough to keep down the temperature any great length of time, we diminish the power of the thermogenetic centres, which is really the stimulus given by the enemy.

By the external mode of thermolysis, sponging along the spine, over the head, in the flanks, the extremities, etc., the best results are obtained. This mode of antipyresis is, in my opinion, under favorable circumstances—that is, when the

stable is fairly comfortable and free from draughts—the most rational.

Treatment.—In the hyperæmic stage acetanilid possesses practical value when the fever is threateningly high; after exudation has taken place, the three sheet-anchors are digitalis, nux vomica and belladonna. If only one is used I think nux has the preference. Digitalis alone almost always fails to stimulate the vaso-motor system sufficiently, and the belladonna has to be added to regulate the blood-flow by its vascular action. The nux finds its greatest value as a tonic to the entire system when the poison of the disease is attacking the nerve-centres.

When the fall of temperature begins to mark the stage of consolidation (the critical stage) then is strychnine and belladonna particularly useful. Under favorable and peculiar circumstances hydro-therapeutics may be advantageously used in the hyperæmic stage, when the temperature is critically high. When I use the term hydro-therapeutics in hippopathology I do not mean deluging the patient with cold water, but I mean frequently sponging with alcohol and water in the manner as before stated. The cold water sponging lowers the temperature. It acts in two ways: it alleviates nervous irritability, calms excitement, and stimulates metabolism. All heat is produced by motion or activity; the temperature of the body depends upon the vital power of the cell as it goes through its cycle of growth, nutrition and reproduction. The movements are modified by certain conditions; when these are normal we have a natural amount of heat production, but under accidental circumstances the cell is compelled to act more energetically, and with its increased energy there is produced more heat, which is manifested as fever.

Hyperthermia may be treated in two ways: First, by those agents which abstract heat from the body, as local or general application of cold water. Second, those drugs which diminish the internal generation of heat, either by stimulating the inhibitory heat nerve centres or by antagonizing the heat-exciting factors in the blood. Among the

drugs for diminishing heat production quinine finds the greatest favor, but I must say I cannot speak of it very favorably; it deranges the nervous system, apt to cause headache, and disturbs digestion; moreover, it has to be given in very large doses to accomplish any reduction of temperature, and is a powerful heart sedative; and, as death in pneumonia usually occurs with a systole of the heart, a powerful sedation of that organ and a prolongation of the diastole might prove disastrous.

Acetanilid is apparently the safest of all the antipyretics. Nevertheless, in large doses it also produces a certain depression of the cardiac strength, which is undesirable in pneumonia. Two drachms is the dose I usually give, the temperature falling in about one to two hours, but it will rise again in about four to five hours. All the drugs are only temporary in their antithermic influence; nevertheless, they exert a very beneficial effect, inasmuch as the patient exhibits a certain amount of calm relief as soon as the temperature falls, and commences to eat.

Fashion rules in drugs as well as in dress, and hems are made wide or narrow, according to the dictates of the leaders. The therapeutical fashion for the treatment of pneumonia may be divided into six categories: (1). The depleting method; (2) the supportive; (3) the expectant; (4) the antipyretic; (5) the antiseptic; (6) the symptomatic.

The depleting method, I am sorry to say, has not yet been abandoned. Sweating with oil-silk bandages, bleeding, tartar emetic, veratrum, are the therapeutics still in vogue among some who stand high in the profession. Do these men ever stop to think that disease means a weakened constitution, and that the term sthenic and asthenic signify merely that some patients are weaker than others, and therefore need more support?

The expectant method carried out means the let-alone treatment, and it has found many strong advocates; but when we meet complicated and severe cases, according to the complication, age, condition, etc., of the patient, we lose faith in the mere water treatment.

In conclusion, I wish to make one remark: pneumonia is a disease peculiarly adapted to mislead in regard to the therapeutical data. Endowed with a critical defervescence, which is apt to appear anywhere from the fifth to the twelfth day of the disease, it is obvious that early defervescence will score to the credit of any drug that is used for any length of time. My greatest faith is in the cold water sponging, watching the heart, and keeping up the appetite.

Mention has been made of alcohol, and it is extensively used by some, but one should try to keep a clear idea as to its indications. I would say that the majority of pneumonia cases do not require alcohol; and, therefore, I can see no reason for giving it. I am thoroughly averse to its use in the early stages of pneumonia. Expectorants are of no use, as a rule, except to disturb digestion.

Then we may say that in all microbic diseases we have an illustration of that potent factor in the life of the organism, the struggle for existence and the survival of the fittest, and the energy expended in the battle is measured by the clinical thermometer in degrees of heat.

ETIOLOGY OF TUBERCULOSIS.

ALBERT BABB, A.B., M.D.C., Springfield, Ill.

(A Paper read before the Illinois State Veterinary Medical Association.)

When Pandora opened the fatal chest which inundated the world with sorrow, misery and death, there was no greater pest escaped beneath its ominous lid, than this most widespread and mortal of all diseases—tuberculosis. Where the sun's rays fall there is its habitation, and no domestic animal is wholly exempt from its ravages. The crowded city and the public mart are its favorite places of abode, but there is no tribe of people, nor breed of animals accompanying it so far removed from the centres of civilization and refinement that its death grip and cadaverous visage are not sorrowfully familiar. Every human or animal tissue is liable to be invaded by its products, and the footprints of its silent journey are demonstrated on every dissecting table. It has been

estimated that two-sevenths of all mankind are overcome by its onslaughts, and, as it is originally a disease of horned cattle, no doubt thousands upon thousands of our bovine friends, from the same cause, come to an untimely end, or go prematurely to the shambles where their quarters are duly tagged No. 4, sold at a reduction, and serve to spread the curse among the lower classes of society.

The antiquity of this disorder is well established. The great Hippocrates, justly styled the "Father of Medicine," was born on the small island of Cos, off the coast of the ancient province of Caria, in Asia Minor, about 470 years before Christ, and gave to the world the oldest account of medicine which it now possesses. He frequently discourses upon it, in the first and third books of the *Epidemics* and in the immortal *Aphorisms*, which the medical student of to-day would do well not only to consume, but also to ruminate, to digest and thoroughly to assimilate. He has both called it expressly by name and given us such a minute and accurate symptomatology of phthisis, that not even the most cursory reader can fail to recognize his vivid picture. In another part of the Hippocratic collection of manuscripts, it is distinctly stated that cattle, sheep and swine are very subject to tuberculosis, but it is argued that man is still more liable to its attacks. And from that remote date down to the present time, a large amount of the medical literature has been devoted to its consideration. Such is tuberculosis, to the etiology of which I now invite your attention.

In these most ancient writings no cause is assigned for the disease but heredity. However, this is modified by stating that changeable spring weather and certain slender conformations were accountable for its more frequent appearance. From the death of the renowned Hippocrates till about the four hundredth year of the present era, the science of medicine made little or no progress, its writers being content dumbly to reiterate the opinions and sublime truths of their noble ancestor. In reality it scarcely held its own. After which the dark ages hovered over and settled down on Europe, like a pall, burying her in such thick darkness and

causing such a relapse into mental torpor, that medicine as a science was almost wholly unknown. So low in the intellectual scale did those countries sink, which in recent times have figured so prominently in polite literature and scientific attainments, that when Francisco Pizarro with a handful of Spanish adventurers overrun and subdued Peru he found a regal power in the New World which far surpassed, in the arts of civil government and quiet domestic amenities, anything of the kind which had existed in all Europe since the coming of Christ, excepting, perhaps, the Moorish supremacy located in the southern half of Spain, with its seat in the picturesque Alhambra.

The Arabs were the most learned people in medicine at that time, for while our ancestors were trying to charm away diseases and to cast out the supposed evil spirits by monkish trickery, the astute and perspective followers of Mahomet and the Koran were assiduously prying into nature for new therapeutical agents, and at Alexandria studiously dissecting the human body. Finally the lamp in their lighthouse died out, and there was not one beacon left burning to guide the intellectually-bewildered seamen of the Old World.

Centuries rolled by, but it was not till about the year 1600 of the Christian era that Europe began to shake off the coma and apathy which had so long before enshrouded her. Although there was thence a general awakening into intellectuality, yet it was as late as A. D. 1810 when any advance in the etiology of our particular disease was made. In that year Bayle demonstrated the existence of small peculiar nodules widely disseminated in the organs of consumptives. His statement aroused to new endeavors the pathologists of his day and they sought eagerly for the ultimate cause of tuberculosis.

Laennec, noticing the frequency of scrofulous glands in his phthisical subjects, called everything tubercular which was caseous in its nature, but Virchow, finding caseation occasionally in inflammatory processes and in cancerous ulceration, pronounced the miliary tubercle alone pathognomic of tuberculosis.

The eager search went on, and in 1865 Villemin showed that the disease could be communicated to healthy animals by inoculation. This was a great advance, and now the foremost pathologists assumed an organized entity as the cause of consumption. At last, in 1881, the illustrious Robert Koch completed the long search by finding the bacillus tuberculosis. He announced and demonstrated that every tissue is tubercular which is excited into a morbid state by the pathogenetic action of these specific bacilli discovered by him. He cultivated the germ in artificial media for several generations, and, subsequently, with the products of his untiring zeal, inoculated various animals, transmitting to them the original disease with its peculiar semiology and post mortem lesions, showing conclusively that this particular bacillus was *the* cause of phthisis. In addition, this same bacillus has been discovered in all the various forms of tuberculosis, which are called by different appellations. Of these names, one of the most common is phthisis, from the Greek *φθίειν*, "to waste away," so designated on account of the extreme marasmus accompanying the last stages of this withering ailment; if the lesions are confined principally to the lungs, it is spoken of as phthisis pulmonalis, decline, pining, wasting or consumption; if it is enteric in its nature, the name tabes mesenterica, or perishing of the intestines, from the Latin *tabere*, "to decay," is used; if the lymphatic glands are involved, it is called scrofula from the Latin *scrofa*, "a breeding sow," as hogs were supposed to be subject to a similar complaint, or perhaps the swellings on the throat bore a fancied resemblance to little pigs. The cervical adenitis is also called quince, strumes from the Latin "*struma*," "a scrofulous tumor," hence those affected are said to possess the strumous diathesis, or king's evil, from its marked frequency in the royal families of the Old World, which were notoriously incestuous in their marriages, and this custom undoubtedly favored the propagation of the disorder. From the shape and color of the tubercular deposits in various parts of the cadaver, it is called in France *pommeliere*, a term allied to the Latin "*pomum*," "an apple," signifying "lumpy," or "in

balls;" in England "grapes," or "the pearly disease," which is the equivalent of the German "*perlsucht*," and in Scotland "crewels," or "angleberries." Likewise *lupus*, which is the Latin for "wolf," so named from its consuming nature and its rapacity, is now known to be tuberculosis of the skin, or tuberculosis verrucosa cutis. The generic term tuberculosis is derived from the Latin "*tuber*," a "bump," or "prominence," as such deposits usually are denser than the surrounding tissues.

Let us now turn our attention to the causes of the disease in each particular animal, or to the manner in which the contagium is communicated. On this subject our standard veterinary writers are lamentably culpable. As high an authority as Dr. Williams, in his "Principles and Practice of Veterinary Medicine," says: "We cannot, however, look upon tubercular diseases, as they occur in horned cattle, as belonging to the same category as the phthisis pulmonalis of man; but," he adds, "similar conditions, both extrinsic and intrinsic," cause a similar inflammatory process. This is certainly opposed to all the rules of sound logic to admit the same cause, the same result, and then to deny the mutual relationship. Furthermore, he states that tubercle results from certain changes in inflammatory processes, for which special changes he assigns no cause but predisposition. All in all, he seems, instead of elucidating the subject, laboriously to envelop it in a thick mist of metaphysical arguments and periphrastic expressions tending only to make it appear more recondite and mysterious. The plain fact in the case is this: that wherever the bacilli lodge there is tuberculosis, and it is the cause of the inflammation—not its sequela.

And certainly the works of the celebrated Dr. Fleming on the subject are no better. He sums up the matter as follows: "There are two causes which appear to be most potent in its production; these are prolonged lactation and a cold and damp atmosphere." "A cold atmosphere, and especially if it be also damp, is almost certain to induce the malady in cattle brought from a warm or mild climate." He then relates that a herd of South Devon cattle were removed from

their native land to the cold highlands in France where they were all swept away by this plague. He further remarks: "So numerous were the cases of tuberculosis occurring among these cattle that local observers believed the disease to be contagious." Such arguments as these refute themselves, for years ago tuberculosis was proved to be highly contagious, being readily transmissible, not only among the various quadrupeds, but also from man to them and *vice versa*, and one can but express his amazement that Dr. Fleming, F.R.C.V.S., the great high priest of English veterinary medicine, should utter such nonsense. This serves to show that Dr. F. S. Billings was not far wrong, when in 1892 he stated that our veterinary books were "150 years behind the times."

This is the ultimate principle: for the disease to be communicated, the germs or their spores must be transmitted. It is not probable that the bacilli multiply outside of the animal body, as their pulutation requires a medium of from 85° to 105° Fahrenheit; but they retain their vitality and virulence at very great extremes of temperature. All the liquid excreta carry them and may convey the contagium to sound animals. They abound in the saliva. Phthisical sputum will impart the disease by inoculation even after it has been dried several weeks, and in this state is equally as virulent as moist. Contamination by inhaling dust mingled with this dried expectoration is the most common form of acquiring the germ in man and frequently imparts it to the domesticated animals. This is one cause of the frequency of the disease in the lungs and air passages, for the bacilli possess no motion of their own, but in a perfectly passive manner are carried about in the medium in which they exist till they reach a suitable nidus and proper pabulum for their multiplication. At first their lesions are always topical. Injections show that primarily they develop locally; if the inoculation be made in the anterior chamber of the eye, a tubercular iritis results; if in the abdominal cavity, a tubercular peritonitis; if in the coverings of the brain or spinal cord, a meningitis; if in a joint, an arthritis; and if in the lung substance, a pulmonary phthisis, etc. The expired air of contaminated sub-

jects contains bacilli, consequently close, hot barns, basement stables or box-cars may prove an occasional channel of infection.

Elaborate experiments have been conducted at many of the veterinary colleges across the water, and at the Munich Pathological Institute, showing positive results with various animals made to inhale atmosphere sprayed with distilled water, holding in solution sputum and the contents of tubercular cavities of lung tissue.

Animals, especially cattle, may become infected by licking one another, by drinking at a common watering place or by eating fodder previously polluted by the saliva of their kind. A cow may impart the germs to her newly dropped calf, in performing the first maternal duty of cleaning and drying it, or later in caressing it with her tongue about its mouth, nose or vulva, or in licking her own udder and teats.

The feed is also a fruitful source of the disorder, and one of the commonest vehicles for the germ is milk. The young of all the domestic animals, as well as infants, are frequently fed on the milk of the cow, of all quadrupeds the one most subject to phthisis. Her own offspring usually relies on her for its early sustenance, and pigs, dogs, cats and chickens often gain access to uncooked milk in one form or another.

The mammary gland of a phthisical bovine secretes the bacilli, and they pass off in the lacteal fluid even when there is no local tuberculosis present and no signs of mastitis in any form. But when the case is well advanced and gelatinous degeneration of the udder thoroughly established, then is her milk particularly dangerous.

On account of this very cause many a future candidate for show-yard honors is, during this period of rapid cell proliferation in calthood, storing up in his system the seeds of an incurable malady which will, ere long, render him only valuable as a pathological curiosity to the student of veterinary science.

Any kind of ingesta may prove a carrier of the contagium. Many of the carnivora, as well as chickens and pigs, frequently get infected by eating the viscera of animals slaugh-

tered for human food or devouring parts of unburied carcasses.

Dogs and chickens further propagate the disease by picking up the sputum of the human phthisis, and the pig by consuming the offal or by drinking the urine of affected cattle. Rats and mice, by acquiring the disease about slaughterhouses, may transmit it to the dogs and cats devouring them.

The entrails of chickens, tainted with *tabes mesenterica*, frequently prove the death morsel of dogs, cats or pigs.

The abraded skin may be the first organ affected by the germ-carrying dust settling on the parts, or by saliva from the tongue.

Also, there is a possibility of animals, suffering from eczema, mange or lice, by frequenting a common rubbing-post, spreading the complaint by inoculating one another in the form of lupus, which tends to become disseminated from the corium of the derma through the lymphatic and blood vascular systems.

All the minor surgical operations furnish a means of propagating the evil, unless at all times strict antiseptic precautions be taken, for either the operator, the assistant or the nurse may be phthisical.

Circumcision of the infant has resulted fatally from a like cause. The germs may find entrance by a cavity in the carious tooth and eventually gain access to the systemic circulation.

These methods may seem too trivial to warrant mention, but it is well known to surgeons that large wounds are not, while small wounds are, readily susceptible to the action of the virus.

In regard to its heredity much has been written from the remotest times down to the present day. Cases of congenital tuberculosis with definite symptoms and lesions at birth have seldom, I believe, been reported, and in general the *tendency only* to this dread disease is inherited. This is in accord with the anatomy and physiology of the reproductive organs, for if the semen contained numerous bacilli, which

are motionless, the spermatozoa, which are very mobile, would leave the former deposited in the vagina, while they would move on into the uterus or even up the Fallopian tubes to meet and to fructify the ovum. As there is no direct communication between the blood of the dam and her foetus in utero, the latter would usually escape circulatory contamination. Hence, it is fair to conclude that very young tuberculous subjects become infected from causes acting subsequently to parturition, principally from the milk. But it can readily be perceived how the dam can be inoculated by coition with a diseased male or during delivery by the manipulation of a phthisical accoucheur. This is no utopian scheme of fine, attenuated reasoning, for injections of virus per vaginum in rabbits and bitches prove uniformly positive, though canines are by no means highly susceptible to the action of the contagium.

Tuberculosis is no respecter of persons. While it will doubtless undermine the weak in constitution more quickly, and develop more rapidly in a soil previously prepared by a prior pathological condition, yet neither the Herculean athlete in the circus nor the majestic shorthorn in the show-yard is exempt from its all-conquering visitations.

In conclusion, let it be remembered that the reception of the bacilli, or their spores, into the animal economy is *absolutely* essential to the development of tuberculosis, and that without them no amount of abuse or bad hygiene can cause it.

If these bacteria possessed motion of their own kind, and were of such quick growth as to avoid being eliminated before becoming established in the system, then the trouble would soon become nearly universal to the man and his lower but priceless companions, unless some modern champion of Æsculapian honors should arise more mighty than a Jenner, a Pasteur, a Billings or a Koch, able to battle with the prodigious foe, and, like the infant Hercules, to strangle the huge serpents which seem sent to bring about our destruction.

EXPERIMENTAL PRODUCTION OF PERIPNEUMONIA CONTAGIOSA WITH CULTURES—PROOF OF THE SPECIFICITY OF PNEUMOBACILLUS LIQUEFACIENS BOVIS.

By M. S. ARLOING.

(Extract from the Comptes rendus of the Academie des Sciences.)

I.—In the two papers already published I had condensed the result of my researches upon the bacteriology of bovine contagious peripneumonia. In the second, particularly, I exposed my attempts to determine the microbe productor of the disease, and said that the determination of a pathogenic microbe was complete when by the inoculation of its cultures the lesions from which it proceeded were reproduced. I also stated then that it had been impossible for me so far to reproduce exactly—that is, with all their intensity—the characteristic lesions of the natural peripneumonia, or those accompanying sometimes the inoculation of pulmonary virulent serosity in the subcutaneous connective or dermic tissue with pure cultures of the microbe I have called *pneumobacillus liquefaciens bovis*. And yet I had concluded to its specificity because of a series of facts observed in my numerous attempts to inoculate which, though of secondary value, agreed altogether.

Since that time I continued my pursuit of the positive proof of my assertion, viz., the integrate reproduction of the lesions produced by the peripneumonic virus in the living and in the connective tissue with the cultures of the microbe above named.

The doubts which had been raised upon the etiological value of the pneumobacillus by those among us who had studied the disease, urged me to furnish this demonstration, and especially when among the disbelievers the supposition was expressed that peripneumonia was probably the work of a living particle, escaping all the means of cultures and coloration actually used in the study of the known microbes.

Working along, I had observed that the pneumobacillus, in its culture of bouillon, gave out toxic substances to which

animals having peripneumonic lesions were more sensitive than healthy animals. And, besides, I convinced myself that complete cultures, under a given virulent state, would give to the bovine an equivalent equal to that produced by the serosity of the diseased lung inoculated according to Dr. Willems' method, and without exposing him to any dangerous condition.

Of these facts more later on. To-day I desire to show: 1st, that the essential agent of the virus acts like other ordinary microbes; 2d, that this agent is the pneumobacillus.

II.—Admitting that peripneumonic virulency is functions of a living particle, it must increase with the number of particles existing in the serosity of the diseased lung. If this particle is an ordinary microbe, and if its vehicle can act for it as a media of culture in placing the serosity simply in the conditions where the microbe may multiply, its activity will increase to a certain degree and in proportion to the duration of the culture.

Consequently, if by inoculating under the skin of a bovine equal quantities of pulmonary serosity, collected pure and first submitted to an incubation at $+35^{\circ}$, local effects are obtained and increase in proportion to the length of the incubation, one will conclude that the peripneumonic virulency is function of an ordinary microbe. Experiment has furnished evidences confirming the foregoing.

Pulmonary serosity increases in virulency and becomes slightly cloudy in the hot air. The cloudiness is due to the numeric increase of the germs, to their multiplication, as it is proven by the culture in spread gelatine when this operation is possible.

From these experiences cannot one infer that the pathogenic agents of peripneumonia are living particles, able to multiply in their natural vehicle; in other words, are microbes such as a certain number of those that we know?

III.—Cultures of serosities, taken out of an incubative store, made in spread gelatine, have simultaneously shown an increase in the virulency and in the number of the germs:

If I add that the colonies where the germs are more numerous are liquefying, it will be logical to conclude that the *pneumobacillus liquefaciens* is the pathogenic agent of peripneumonia.

However, as this mode of demonstration might yet be only an indirect solution to the second question of this paper, I will not further insist, as I am prepared to give a positive answer, as follows:

First, I was convinced that the effects of my inoculations to demonstrate the etiological part of the pneumobacillus had proved insufficient because of the activity of the microbe grown in my cultures having originally been too weak. And again, I have observed, as early as 1889, that the organisms contained in the pulmonary serosity had become more virulent while growing under the skin of cattle. I was therefore justified in hoping to find more active microbes, such as I desire them, in the caudal lesions following. Some trust the inoculation by Willems' method, lesions gradually increasing notwithstanding the bad surrounding conditions. I was anxious to undertake a new series of cultures and of observations. Mr. Robcis, sanitary veterinarian, of Paris, gave me the opportunity.

In the deep layer of the dermis and in the intermuscular connective tissue of a caudal region tumefied under the influence of a peripneumonic virus, I found a great many more microbes than in the centre of pulmonary lesions. These microbes multiplied rapidly and abundantly in beef boullion strongly peptonized.

By Koch's method for the isolation of the species I separated from the cultures two bacilli differing principally from each other by the power of one to rapidly liquefy gelatine. The non-liquefying bacillus is generally shorter than the other. Both are abundantly provided with ciliæ. The liquefying bacillus answers exactly to the characters that I found long ago in the pneumobacillus. In cultivating pure I was enabled to experiment on its physiological action.

First, I had been surprised at the intensity of the subcutaneous effects of 2 c.c. of a second generation—effects

that were quick but exactly similar to those of the most active pulmonary serosity. I thought the opportunity excellent to try to obtain fructuous nitro-pulmonary inoculations. I prepared a culture of third generation, and the next day I pushed 2 c.c. in the thickness of the right lung of a fifteen months bull. This was repeated the next day. Three days later the animal was killed. At the post mortem I found a pneumonic mass of the size of the wrist, presenting to the highest degree all the characters of the lesions of the natural contagion.

In a second experiment I inoculated in the lung of a young bovine a culture of fourth generation, with the small dose of 0 c.c. 5, to avoid the immediate toxic effects of large doses, and renewed the inoculation for three days with cultures of following successive generations. Six days after the first inoculation the animal was killed. The post mortem showed well characterized pneumonic centers and pleuritic lesions opposite them, as well as at the antero-inferior part of the chest.

In a third experiment, to still better avoid the immediate toxic effects, I simply injected the microbes contained in 10 c.c. of a tenth generation culture. The injection having been introduced a little too far back, the bacilli were by chance deposited beyond the lungs, on both faces of the diaphragm. At the post mortem made five days later I found a sero-fibrinous thickening of the diaphragm, extending to the lung in front, to the peritoneum and the liver behind, in such a way that the three organs formed the center of a tumor surrounded with false membranes. I found, besides, a well-marked pleurisy on a level with the pericardium and the two anterior lobes of the lung, citrine effusion in the pleura, enlargement of the mediastinal and sub-pleural lymphatic glands.

IV.—To conclude, I have reproduced in the bovine, with pure cultures of the pneumobacillus taken between the second and the tenth generations, the typical alterations produced under the skin or in the chest by the virus of the peripneumonic contagiosa. I then peremptorily can say, first,

that the virulent agent of contagious peripneumonia is an ordinary microbe ; second, that this microbe is the *pneumobacillus liquefaciens bovis*.

STRONGYLUS TETRACANTHUS AND STRONGYLUS ARMATUS AS A CAUSE OF DEATH.

By GEORGE DITEWIG, D.V.S., Canton, Ill.

(A Paper read before the Illinois State Veterinary Medical Association.)

In this paper I shall endeavor to recite my experience and observations while treating a small herd of colts that were seriously afflicted with the parasites, strongylus tetracanthus and strongylus armatus. I do not presume to advance new facts or theories in regard to these parasites, but trust that the history of the cases mentioned will prove interesting from the fact that both parasites were present in such great numbers.

To give a detailed description and complete life history of the parasites would require some time, so I will not tire you with them ; besides, you are doubtless more or less familiar with them. But to refer to them briefly will be in order. The strongylus tetracanthus is one of the small nematodes found in the intestines of the horse. The female is larger than the male, the length varying from one-fourth to three-fourths of an inch, depending upon sex and development. The more fully developed worm is of a bright red, the smaller a dirty gray or brownish color. The body is slightly tapering anteriorly, and are found in the cæcum and colon.

Life-segmentation of the ova takes place in the uterus ; they are laid in the intestines of the host, from whence they are expelled with the fæces. If the conditions in the external world are favorable, they will hatch out in a few days ; if at this time they enter into the body of the host, they will encyst themselves in the mucous membrane of the large bowels, until sexual maturity is attained, when they leave the membrane and enter the alimentary canal.

Strongylus Armatus (The Armed Sclerostome or Palisade

Worm.—For a very complete description of the parasite I refer my hearers to a very able article by Dr. J. F. Winchester in the AMERICAN VETERINARY REVIEW, Vol. XVII, No. 7.

Body gray or brown, shaded with red, female larger and thicker than male, length varying from three-fourths of one to two inches, depending upon sex and maturity.

The following is from Williams :

“The sexually mature adults found in the cæcum and colon ; seldom in the duodenum, pancreas and tunica vaginalis of the testes. The larval forms in aneurisms of the intestinal arteries, the eggs come out with the excrements and develop free living larval forms in water, and thence into the blood vessels, where they cause aneurisms ; becoming sexually mature, they leave the aneurisms and bore their way into the alimentary canal where they copulate.”

In the last week of November, of 1894, I was called to the farm of E. Brown, a friend and patron, place about fourteen miles distant, to examine a herd of colts. Received the following history : In the spring the colts had been placed in a rented pasture about four or five miles distant, and there remained until within a few days previous to my visit. While in pasture they had been visited at different times by the owner, who noted that they were in poor condition, and unthrifty. This was attributed to short pasture during the summer drought. They had not, however, been visited for quite a period previous to November ; in the last week of that month the keeper of the pasture informed him, that one of the colts, a two-year-old, had died, the rest doing very poorly. They were promptly brought home and placed in the comfortable box stalls in which I found them.

The pasture was described as rolling timber land, with a portion of lowland. Water was supplied by a spring, which during the summer drought ran low, yielding barely enough to replenish a few stagnant pools. After a careful examination of the herd, then consisting of three yearlings and two two-year-olds, I was forced to the conclusion that a more sorry looking and dejected lot of colts it had never been my lot to see. Weak and very much emaciated, tucked in the

hanks, rough, harsh coat, pulse weak and soft, somewhat increased in frequency, slight elevation of temperature, respirations about normal, mouth a soapy feel, and pale, visible mucous membrane, some œdema of the hind legs, appetite almost entirely absent, all would nibble some at their feed, but with little show of relish. All would lie down more than strong or healthy colts usually do, one so weak that when down required assistance to regain his feet. Intestinal rumblings were frequent, and loud enough to be heard at some distance. There was present diarrhœa, varying in severity with the different colts; the fæcal matters were, some grayish, some greenish in color; odor fœtid. On the surfaces of the fæcal masses were in great numbers the parasites strongylus tetracanthus, also an occasional undeveloped strongylus armatus. The dullness and languor exhibited in the movements, and woe-begone expression of countenance, were well in keeping with the general condition of the colts.

Diagnosis.—Intestinal catarrh, induced by intestinal parasites, anæmia and debility as a result.

Treatment.—Dry beds, comfortable box stalls, an abundant, nutritious and varied diet, consisting of oats, bran, ear corn, ground feed, chopped corn fodder and timothy hay, given fresh and as often as the colts desired, milk and eggs if they were to be had. Authorities usually recommend oil and turpentine. To commence with I ordered spiritus terebinthinæ, one and two tablespoonfuls, with four ounces of olei lini, every twelve hours, until active purgation was produced. This effect was easily obtained because of the already existing diarrhœa. The result was an increased number of the parasites in the excrements, but this result, if beneficial, did not overbalance another effect, that of greater emaciation and loss of appetite. Acting on the conclusion that purgation was injurious to my patients, I followed a different course. Tincture opii, tincture catechu, spiritus terebinthinæ, in a drench of milk, two or three times daily, until diarrhœa was checked. A powder was also given, consisting of ferri sulphas exsic., powdered zingiber, powdered gentian rt., powdered hydrastis can., given three times daily.

This and the opium mixture was the treatment for some time, the powder constantly, the mixture whenever the diarrhœa required a check; some improvement in appetite and general action, but not enough, so the oil and turpentine were again tried as before, because books said give oil and turpentine, but the *oil* was again discontinued for reasons already mentioned.

The patients received good care, warm shelter, appetites tempted in every convenient way, so that a moderate amount of nourishment was taken, but to no purpose. The patients grew thinner and weaker, the diarrhœa persisted in its returns. One at a time became too weak to regain the standing position without help, and when that point was reached death followed in a short time, so that by the New Year the second, third, fourth died; the fifth, a yearling, died during the last week in January; from the latter the post mortem description is taken. The sixth, a two-year-old, when last seen, seemed in a fair way to recover; this one throughout was least troubled with diarrhœa, has regained his appetite and taken on some flesh.

Post Mortem.—Subject, a yearling gelding, the fifth of the herd to die. Time of examination, two hours after death. The common expression, “nothing but skin and bones,” would well have described the appearance of the cadaver. Visible mucous membranes pearly white; opening incision along the median line, the abdominal tissues and muscles pale and anæmic. With the exception of the liver and the right lung, which were slightly darkened by hypostatic congestion (the subject lay on the right side some time before death as well as after), the pale and anæmic appearance of the various abdominal and thoracic viscera was most striking.

The deficiency of blood was so marked a condition that one marveled how the vital processes continued to operate as long as they did. The stomach, empty, pale; liver, somewhat shrunken, firmer and harder to touch than normal, granular on section. The small intestines contained a small quantity of fluid alimentary material, also a few lumbricoids; the walls were pale and thin, presenting a transparent ap-

pearance; imagine them much distended with air and you will have pictured to yourselves their thin appearance. The cæcum, partly filled with alimentary material in which were to be seen the strongylus tetracanthus in great abundance; the mucous membrane of this organ was an interesting study; when washed the mucous surface was a mixture of dirty gray and olive green in color; the latter I ascribe to the action of the iron administered in the powders; the membrane, œdematous, lacked firmness and was easily torn. Close inspection of the surface revealed the presence in almost countless numbers of small spots that appeared as reddish or dark points. A sufficient number of these were examined to prove that each one was or had been the home of a developing tetracanthus. Pick an opening into the membrane at one of the points and one of the parasites, neatly coiled, could be seen. The description of the cæcal membrane will do for that of the great colon.

It would be difficult to estimate the number of these parasites lodged within the membrane of the great colon and cæcum. Suffice it to say that thousands had been expelled and thousands yet remained.

The membrane of the floating colon contained few, if any, of the parasites. So much for the tetracanthus.

To describe accurately all the lesions (principally of the blood vessels) produced by the strongylus armatus would require a handier pen than mine, but I submit for your inspection a section of the colic artery that will testify very strongly to the destructive work of the armatus when present in large numbers. In the specimen you will perceive there has been present a severe endo-arteritis, and that instead of a smooth channel for the passage of the blood there remains a rough, lacerated and irregular canal through which the blood must creep and wind about to circulate. The arterial wall is enormously thickened by hyperplasia of the connective tissue elements, the middle coat in particular. Free on the inner wall or buried in the arterial tissues, or with head or tail projecting into the blood stream are numerous undeveloped strongylus armatus, like the specimen, was the condition of

the greater portion of the colic artery. The great mesenteric and many of its branches exhibited similar lesions. The cæliac axis and branches did not escape, the hepatic at the posterior fissure of the liver harboring many of the parasites.

Along the course of the colic arteries and lesser curvature of the great colon was a chain of tumors varying in size from a pea to a walnut. Cutting showed them to be abscesses containing a creamy pus in which floated usually one strongylus. Scarcely a blood-vessel of the digestive tract escaped their ravages. Aneurisms of any marked size were absent.

Here and there, in the worst affected arteries, were small adherent thrombi. Near the pelvic flexure of the great colon, between the layers of the mezo-colon, was a large blood-clot, perhaps two pounds in weight. This hæmorrhage was probably due to perforation of an arterial wall by one of the parasites, or rupture of one of the small aneurisms of the colic artery. No matter where cut, in the arteries could be seen the pale pink forms of the undeveloped armatus parasites. They numbered throughout, stating it mildly, hundreds.

This was the only autopsy made, but the history, symptoms, course and termination being so markedly similar in all the fatal cases leads me to conclude that all would have presented similar lesions had the examination been made.

In closing, will venture some conclusions:

First, that death was the result of anæmia, marasmus, prostration and collapse.

That the progressive anæmia was due to the continual interference with the nutritive functions of absorption and assimilation.

That the diarrhœa was caused by the disturbed intestinal circulation and irritated intestinal mucous membrane.

That the weakness and marasmus followed as natural results of anæmia and diarrhœa.

That the causes continuing in operation, the effects not only continued but became so marked that the vital forces gave way, and death followed.

That the strongylus armatus in the intestinal arteries, and the strongylus tetracanthus in and on the intestinal mucous membrane were the first causes.

That the pathological changes are produced by the armatus in certain structures, and, as a result, of these changes interference with the necessary functions of these organs, prove the armatus responsible in the greatest measure for the death of the host.

That the tetracanthus by its presence shares with the armatus a part of the responsibility.

That though the hosts harbored thousands of the tetracanthus strongylus, it is doubtful if they alone would have caused death.

That previous to and since my detailed experience I have treated not a few weak anæmic colts and horses afflicted with the tetracanthus, recovery has been the rule; in fact, I cannot recall any fatal cases (the subjects under consideration excepted), and arrived at the conclusion that it required simply an enormous number of the red parasites to kill the host, and still believe that conclusion correct.

That when death is apparently due to the tetracanthus, careful inspection be practiced to discover if the armatus is not also present. If present, to what extent.

That how to demonstrate the presence of the armatus in dangerous numbers in the living animal is something I have yet to learn. The symptoms exhibited by the colts in question can be attributed to the tetracanthus as well as the armatus.

That it is manifestly difficult to suggest a feasible plan of prevention. Draining ponds and low lands and supplying stock with water from wells and cisterns would probably be a step in the right direction.

That we have no specific treatment or sure cure. I wish we had.

That the study of "animal parasitisms" is worthy all the attention that we as veterinarians are wont to bestow upon it, perhaps more.

BOVINE TUBERCULOSIS.

TREATING ON THE DANGER FROM COW'S MILK, AND THE
LEGISLATIVE CONTROL OF BOVINE TUBERCULOSIS.

By JOHN M. PARKER, D.V.S., Haverhill, Mass.

[Continued from page 195.]

While Dr. Peters, when he was Chief Inspector of Stock for New York State, in a report to the United States Veterinary Medical Association in October, 1893, said: "In suspicious cases when doubt is felt as to whether an animal is tuberculous or not, it is well worthy a trial; and in herds where a number of cases of tuberculosis are found, I believe it to be advisable to test the entire herd with it. I do not, however, believe it necessary or practical to go to every farm in the country and test with tuberculin every cow to be found; but if it be inspected in the ordinary way and found to be healthy, I consider that sufficient."

From this it is evident that those best able to judge are not unanimous in their opinion as to the best methods to adopt.

In discussing the question before the Legislative Committee the Cattle Commissioners referred to the measures so successfully adopted to suppress contagious pleuro-pneumonia in this State. Further, the Governor in his inaugural address referred to the success attending the adoption of these measures, thereby leading to the supposition that as these measures were so successful in combatting contagious pleuro-pneumonia, they would probably be equally successful in combatting bovine tuberculosis.

Now, it seems to me that these two diseases are entirely different. Contagious pleuro-pneumonia is an extremely rapid and fatal disease. According to the special "Report on Diseases of Cattle," published by the Bureau of Animal Industry, the disease will develop in from three to six weeks after exposure, and often acute cases are fatal in from seven to twenty days after the animal is attacked. On an average 40 per cent. (and according to some authorities 80 per cent.,

Jour. of Comp. Path.) of animals exposed will contract the disease, and about 50 per cent. of these will die. Further, contagious pleuro-pneumonia is found only in the bovine.

On the other hand, bovine tuberculosis is an extremely slow and chronic disease; it is not a fatal disease; it is not a highly contagious disease, for a large proportion of cases are entirely harmless; and further, it is not confined to the bovine, but is found in all domestic animals.

In a Report of the Department Committee on Tuberculosis in Great Britain, appointed April, 1888, it is stated that the order in which animals are liable to be affected is man, milk cows, rodents, pigs, goats, sheep, horses and carnivora. (Annual of Medical Sciences, 1890). Further, the bacillus of tuberculosis has been found in bedbugs (Bulletin of Vermont Agr. Exp. Station, 1893), as well as earth worms, on paper money, and on the dust of public thoroughfares, etc.

When the last case of contagious pleuro-pneumonia is destroyed the danger ceases to exist. With bovine tuberculosis it is entirely different, and I believe certain of the members of the Massachusetts Cattle Commissioners do not dispute it. We have Dr. Lyman's opinion in the Report of the Board for the year 1893, where he says tuberculosis cannot be *stamped out*, it must be *weeded* out, or words to that effect. (Cattle Com. Report, January, 1894.)

Prof. Stockbridge, at that time Chairman of the Board, gave his opinion at a meeting of the Massachusetts Veterinary Association in May, 1894, when he said:

"But we are not so green about tuberculin as we might be, and really I can say that a great deal of good in the way of diminishing this disease may be done by the use of tuberculin, and, therefore, I think the Commission should recommend to owners to use tuberculin, and we think that really a very great advance may be made by its use; but if you believe you are going to stamp out tuberculosis by the use of tuberculin, as we stamp out contagious pleuro-pneumonia, I say, no, we will never do that. We can diminish it, but can never stamp it out. But when our medical profession treat it as a contagious disease, we shall make more advance with the bovine."

Again, in an editorial in the AMERICAN VETERINARY REVIEW, Prof. Liautard says: "Tuberculosis, on the contrary, can never be entirely extinguished, and, at best, the opportunities for its transmissibility to human beings can only be diminished, and that only to a very limited extent, and only, also, with the possibility of a temporary check to a new extension. It is not our desire to criticise at present the work recommended by the honorable Chairman of the Cattle Commission of Massachusetts [Prof. Osgood], but we fear that in his enthusiasm, or by higher orders, he is obliged to carry out an undertaking which will not prove as satisfactory as that carried out in days when pleuro-pneumonia existed in that state."

And further, previous to the hearing before the Senate Committee on Agriculture and Public Health, I sent the following telegraph message to Prof. Liautard, New York; Prof. Leonard Pearson, University of Pennsylvania, and to Dr. Horace Hoskins, Philadelphia, Pa. "Can bovine tuberculosis be stamped out in Massachusetts as contagious pleuro-pneumonia was stamped out?"

Prof. Liautard answered:

NEW YORK, February 10.

DR. JOHN M. PARKER, Haverhill, Mass.:
Most decidedly, No.

A. LIAUTARD.

Prof. Pearson answered:

PHILADELPHIA, PA., February 10.

JOHN M. PARKER, Haverhill, Mass.:
Pleuro-pneumonia method will not do for tuberculosis.

LEONARD PEARSON.

And Dr. Hoskins answered:

PHILADELPHIA, PA., February 10.

JOHN M. PARKER, Haverhill, Mass.:
I doubt it, they differ so greatly.

HOSKINS.

Again, Prof. Paige of the Massachusetts Agricultural College, in a bulletin lately published, says that "our old-styled and unsanitary stables, thoroughly infected with the germs of tuberculosis, make the complete eradication and suppression of this disease well nigh impossible." (Hatch Exp. Station Bulletin No. 27, Dec., 1894.)

While in the Bulletin No. 7, published in the fall of 1894, by the Bureau of Animal Industry, on "Investigations Concerning Bovine Tuberculosis," Dr. Smith says:

"Tuberculosis among domesticated animals, more particularly among cattle, has during the past few years received a large share of attention, mainly because of the possible direct influence on human health. With this idea in the foreground the bearing of this malady on agricultural interests has been more or less obscured. As a result we have a great mass of publications on the hygienic aspect of tuberculosis and but very little on the prevention of this disease among cattle. Many of the more valuable contributions to our knowledge have been made in order to define more definitely what degree of tuberculosis makes an animal unfit for human food. This point of view, while bringing out now and then valuable facts, does not pay sufficient attention to the *animal during life*. What to do in order to reduce the high percentage of infection *among living animals* has been tacitly ignored in all but a few recent publications. It became evident to the writer on beginning these studies, that this was, after all, the most important aspect of the serious problem of bovine tuberculosis. *If the disease can be restricted and suppressed among cattle during life* the hygienic problem will take care of itself.

"To attack tuberculosis as it exists at present is undoubtedly a most difficult problem, and the conditions which tend to repress or to augment its further dissemination are very complex. No single measure, however sweeping, is likely to be successful. A number of details will have to receive careful attention and, in the end, the success will depend largely upon the amount of intelligent watchfulness constantly exercised in various directions by the stock owner. The wide dissemination and the localized intensity of this disease will require, above all, concerted action in attempts for its repression. Though a strictly bacterial disease and introduced into the body only by the tubercle bacillus, which is always derived from some pre-existing case of disease, tuberculosis differs, nevertheless, from most animal diseases in very important particulars. Its unknown beginnings in the body,

and its slow, insidious march after it has once gained a foothold are responsible for the existence of a large number of tuberculous animals in all stages of the disease. In the earlier stages, while the disease is still restricted to a single focus, the animal is to all outward appearances in perfect health. It is only after the infection has invaded several cavities of the body or produced mechanical obstructions that it becomes manifest. The prolonged latency of the first stage of the disease, with little or no discharge of tubercle bacilli, raises the question what should be done in such cases. A comparison with some other infectious diseases makes the predicament all the clearer.

“When an animal becomes infected with anthrax or with Texas fever the specific micro-organisms begin to multiply at once. Within twenty-four hours in the case of anthrax, a few days to a week in Texas fever, the symptoms are fully developed and death or recovery speedily follows. There can be no question here concerning degree of disease or utility of the animal during the earlier stages. The infected and the non-infected are divided by sharp, unmistakable barriers. In tuberculosis, on the other hand, the infected animal is practically well during the earliest stages of disease and the disease may become stationary, possibly healed. In certain diseases the necessity for the destruction of all infected animals becomes imperative, because the disease must be kept restricted and suppressed as soon as possible. The present wide dissemination of this disease and its prevalence among other domesticated animals, such as dogs, cats, horses, goats, and, above all, its prevalence among man, makes the complete extinction of this malady an unrealizable problem.”

Now it seems to me that the authorities at Washington have struck the nail full on the head in this matter.

Before we can prevent disease, it is necessary to study the causes that lead to its prevalence, and then attempt to remedy these causes. To do any good we must get at the root of the matter; we must study to prevent disease in the animal *during its lifetime*.

Why is tuberculosis so prevalent in dairy herds? It is

because of their mode of life, and the way they are kept, and bred, and fed.

In this connection I shall refer to an article by Dr. Herman Biggs, bacteriologist to the New York Board of Health, contributed to *The Forum* (Feb., 1894). He writes as follows:

"While tuberculosis is communicable, it is far less so than many other diseases which are more properly called contagious. Ordinarily for its transmission, long exposure to infection, and intimate association with the infected individual, are required, unless because of some peculiar conditions the natural resistance has been much reduced.

"Influences which depress the general vitality, or which produce more or less chronic affections of the air passages, increase the susceptibility. Foul air, unhealthy occupations, food poor in quality or insufficient in quantity, impaired nutrition, defective ventilation, heredity, bronchial, and pulmonary inflammations, all act as important factors in creating a soil which is favorable for the development of the tubercle bacillus, when once it has gained entrance."

And in the report of the second Congress for the Study of Tuberculosis, held in Paris in July, 1891, it was said that, "if there is one thing above all others to be learned from the study of this well worn, but still obscure subject of tuberculosis, it is that the bacillus alone does not constitute the disease. The host is obviously not the least important element, and the only hopeful means of conquest must be on the lines of physiological resistance. The soil must be rendered sterile." *Med. Record*, Sept. 2, 1893.)

All medical men know the influence of surroundings on the health of the animal body. Pages of statistics could be quoted and figures given in support of this, but I take it that that would be unnecessary. The immense importance of sanitary and hygienic conditions is generally accepted by everyone.

As showing the influence of sanitary conditions on health, however, I would like briefly to call your attention to an extract from the *Med. Record*, (Dec. 30, 1893.) In referring to sanitary conditions in Great Britain, the author says: "The average annual death rate throughout England and Wales

during the twenty years previous to 1870 did not vary greatly from 22.5 per 1,000 of population, and it was estimated by Mr. Simon that 125,000 persons died each year of diseases due to defective sanitary conditions. Although Simon's figures were thought by some to be exaggerated, they nevertheless had great weight in persuading Parliament to adopt the reforms recommended by him. During the next twenty years extensive improvements were carried out on a large scale, with the result that in 1889 the mortality had fallen to 17.9 per 1,000, thus more than justifying the calculations of Simon."

The statistics collected by Dr. Buchanan on this subject are also instructive :

In Salisbury, England, after the introduction of improved drainage, the annual death rate from phthisis fell from $44\frac{1}{2}$ per 10,000 to $22\frac{1}{3}$ per 10,000 between 1857 and 1864. In the same period of time, in the towns of Ely, Rugby, Worthing, Macclesfield, Leicester, Newport and Banbury, the death rate from phthisis fell 47, 43, 36, 51, 52, 52, and 50 per cent., respectively, in consequence of improved drainage alone.

While in the French cavalry barracks, after better sanitary measures were adopted, cases of non-specific diseases of the lungs fell from 104.7 per 1,000 to 3.59 per 1,000, and the only conditions present to account for this remarkable change was increased facility for ventilation and increased cubic space." (*Journal of Comp. Med.*, Oct., 1893.)

The importance of this matter is also shown in Dr. Ernst's report on his experiments at Matapan, where, in referring to the effect of improved sanitary conditions on diseased cows, he says: "Before the farm buildings were used at all, they were thoroughly cleaned from top to bottom. Every portion of old manure was carted away, as well as all the old earth. The whole of the woodwork was scrubbed and then washed with corrosive sublimate solution (1:1000) and finally white-washed, and every care was taken to secure good drainage and ventilation. The result and effectiveness of all this have been best demonstrated by the fact that every animal brought to the place made a most marked improvement in its general condition, while some of them even went so far as to appear to get well." (Ernst.)

The same thing is shown in the case of some cattle at Mr. French's farm at North Andover, where several animals were slaughtered after testing with tuberculin; a number of the remaining animals that reacted to the tuberculin test were turned out to pasture, and in the fall they were brought in and retested by the State authorities and they failed to react, the recovery evidently having resulted from the open air life in pasture during the summer months.

A similar incident is related by Prof. Law. He says: "In 1877 I recognized the existence of tuberculosis in the Jersey herd of Burden Bros., of Troy, N. Y. The worst were slaughtered, but some incipient cases in young animals were turned out in a pasture by themselves, where they passed the summer in apparently robust health, but they began to droop when returned to the barns in the fall. (Paper by Prof. James Law, read at Peterborough, N. H., December, 1892.)

(To be continued.)

REPORTS OF CASES.

GASTRALGIA IN A HORSE, WITH CARDIAC COMPLICATIONS.

By ROSCOE R. BELL, D.V.S., Brooklyn, N. Y.

The patient was a dark brown gelding, 9 years old, 16 hands, weighing 1,150 pounds, the property of the Department of Police, having performed his work as a patrol wagon horse satisfactorily for some three or four years without any history of sickness during the time he had been in the service.

As veterinarian to the department I was called to examine this horse for lameness in the off hind leg, having become disabled without known cause. My examination revealed nothing definite, except that the location of the lesion was apparently in the muscles of the anterior crural region. From general appearances I regarded it as somewhat obscure, with the probability of muscular rheumatism. I ordered the animal sent to my hospital for the purpose of observation and treatment. He was placed in a box-stall and prepared

for a cathartic, which was administered the next morning. On the morning of the second day after the exhibition of the aloetic pill, my attention was called to the patient, and, on examination I found him to be much nauseated, and that his pulse was extremely fast, his heart beating at the rate of 80 per minute, but that the temperature was but little affected, being 100.5° F. He refused all food of whatever nature and appeared to be suffering from slight gastric pain. Occasionally he would lie down, stretch his neck and head at full length and curl his upper lip. The bowels were moving freely, but apparently without causing griping. On account of the alarming condition of the pulse it was deemed best to quiet the excited intestinal peristalsis, and consequently the patient received the following bolus:

℞ Extracti Opii., 3i,
 Pulv. Plumbi Acetatis, 3ii.

This had the desired effect, and no more fluid fæces was voided.

The observation was now made that the lameness for which he was being treated had entirely disappeared.

For the next three or four days there was but little change in his condition. No food of any kind passed his lips—not a spear of grass, not a grain of oats, not a particle of bran nor hay nor food of any description.

The epigastric pain ceased, but the pulse assumed a most peculiar character. For half a minute possibly it would beat at the rate of 100 per minute, for the remaining half at the rate of 36 or 40 per minute. All this time the temperature registered either 100° or 100.5° F., respiration a little above normal, eyes bright, ears erect, and thirst a little above normal.

I can complete my story in much less space if I bunch the history for the next five or six days by saying the last described symptoms persisted about the same, until after eleven days he partook of one bite of grass, which he masticated and swallowed, and on the thirteenth day began to partake of hay in small quantity.

In a few days he was eating well; his pulse, which had

been gradually improving, both in number and regularity of beats, was at this time normal, and when he had progressed thus far he became quite lame in the muscles of one shoulder. This lameness gradually passed away, and a week ago, after having been a month at pasture, he was returned to his precinct entirely well, and feeling livelier and stronger than he had ever been known to be.

To sum up the symptoms, there was rheumatic lameness in a hind leg; a revulsive action upon the system transferred the seat of the rheumatism from this extremity to the stomach and heart, after which it was removed by metastasis to a fore limb, and then left the system.

Treatment of an anti-rheumatic nature was indulged in throughout, and, as the thirst was considerable, stimulants and nutrients were administered in this way.

I record this case, not on account of any skill displayed in causing a recovery, but because gastralgia in a form in which it could be recognized has never before occurred in my practice, and is not dwelt upon in our text-books as a disease likely to be met with in a practical way. Whether it is not a frequent complication in those stubborn cases of rheumatism which we sometimes meet where almost complete anorexia persists for a long time, I am, of course, not prepared to say; but my experience in this case will lead me to make very careful examination of this class of patients in the future. It will explain the condition that there exists more nearly than any other disease. It is morally certain that there is, in most of these cases, no structural lesions, because complete recovery often occurs without medication or explanatory reason.

AN OBSTINATE CASE OF INDIGESTION.

By G. E. GRIFFIN, D.V.S., Fifth U. S. Cavalry, San Antonio, Texas.

A sorrel gelding, five years old, sixteen hands high, well bred and used for driving purposes, was taken ill about two years and six months ago with an acute attack of laryngitis, from which he suffered from six to eight days, the inflamma-

tion being so great that respiration was impeded, and we were constantly prepared to do tracheotomy. After recovery, there was considerable difficulty in deglutition of water for three months, but this finally disappeared and animal improved in health, spirits and condition. Last October the animal was again attacked with laryngitis, which lasted for about sixteen days; animal had great difficulty in deglutition, which lasted for three months, gradually lost flesh and spirit until finally he became a shadow of his former self. At this point he was taken into our private stable, fed six times a day, a pound of food being given at each meal. He had been on tonics for weeks previous to this, but without results. The conditions remained the same under the new scheme for about six weeks, when a slight improvement was noticed; this improvement continued for about a month, when the animal suddenly refused all feed and commenced to again fall away. Food in the shape of green oats and sorghum was now offered and was partaken of sparingly; but appetite began to improve and at such a rate that upward of ten pounds of dry oats, twelve pounds of hay and ten pounds of green food were consumed daily, but without any increase in weight. Tape worm was suspected, but, although a constant watch was kept, no sign of any was observed. Teeth are in perfect condition and food is well masticated, but the droppings always partake of the color of the food ingested. A dry, sticky, clammy condition of the mouth and tongue has been, and is still present, although it has improved some in the past four weeks. Lately all tonics have been suspended, but without any apparent effect.

The animal's temperature has been normal since recovery from last attack of laryngitis; respiration normal, except when exercised, when it is labored; pulse is weak and soft; animal is now in good spirits, eating fairly well, but is still unable to put on flesh or regain his original form. This patient has always had a habit of licking wagon tires, old iron fences, etc., and since he has been under treatment has developed an abnormal appetite for eating earth.

NERVOSA GENERALIS.

BY THE SAME.

April 10th, called to see a four-year-old Jersey cow that was down and unable to rise. Foreman of ranch on which the cow lived said animal went down on 8th. A self-styled veterinary surgeon was called in, diagnosed case as nail in the foot, but the examination did not bear out the diagnosis. He then came to the conclusion that the animal was "strained in the kidneys," and treated her accordingly. She still continued down, however.

On examination, animal appeared to be resting easily on right side, hind legs drawn under and knees turned in; temperature elevated one degree (probably from recent effort to regain feet); pulse normal, except slightly increased in frequency; respiration considerably accelerated. While examination was in progress our setter dog entered the stable, when patient made an extraordinary effort to regain feet, but without success. Urine plentiful, but darker than usual; bowels slightly constipated, appetite fair.

Foreman knew animal for two years, never had this condition to exist before, never sick, always calved without any difficulty and was now due to calve in ten days, according to his register.

When animal was turned on its back, legs appeared to be all right and no evidence of pain manifested on manipulation. After further examination and considerable thinking, decided to let the case rest until the following day, giving our client a "stand off" in the mean time, and administering a pound of sulphate magnesia to the patient to relieve the constipation.

Next day, after reading up on the case, we returned and handed in a diagnosis of *adynamia nervosa generalis* (Armatage), and gave instruction for bedding and frequent turning of animal, with suggestions as to feeding and watering until parturition should arrive; tried a few experiments with nerve stimulants, but without success. Patient gave birth to a very large calf on the morning of the 20th and without apparent difficulty; she was very thin at this time, having lost flesh

rapidly while down. On the second day after parturition patient regained her feet, appetite and milk increased, calf did splendidly and everything went well, even to the paying of the professional fee.

A CASE OF CASTRATION.

BY THE SAME.

In May was requested to castrate a two-year-old colt running at pasture. Colt in poor condition, remarked same to client, who didn't care; wanted him castrated, anyhow. Patient was cast, and testicles, which were very small, exposed; ecraseur was brought into operation, but broke; testicles were taken out by means of a scraping motion of knife; very little hemorrhage; bichloride antiseptic used thoroughly, one to five hundred; animal turned loose and began to feed with other horses, mare and colt and one gelding; doing well next day; no swelling. On the third day lay down and died—was not informed of this until two days afterwards. What was it, peritonitis or tetanus? Have emasculated upwards of three hundred horses and never had a fatal termination until this one.

Perhaps animal was in too low a condition for the operation.

AN INTERESTING CASE AND POST MORTEM.

By W. R. GRUTZMANN, Assistant House Surgeon to the American Veterinary College.

The subject of this article was a bay mare, 7 years old, 15.3 hands high. The animal was suddenly taken sick with influenza; her temperature was 105, pulse 72, respiration 24, and the extremities were swollen.

The animal was placed under diuretics, along with stimulants and tonics, and seemed to get along very well after a few days; suddenly the temperature rose up again to 105, pulse 72, respiration 30, the swelling of the legs disappeared, and on examination of the lungs symptoms of œdema were found along with a tinkling sound, but no distinct symptoms of pleurisy.

The animal was placed under treatment again—diuretics, stimulants and tonics—the symptoms of œdema disappeared and the horse was improving. After a few days we were notified by the owner that the horse became worse again, and on the 5th of May, 1895, he was admitted to the hospital of the American Veterinary College. The animal was then examined, and her temperature was $102\frac{3}{5}$, pulse 50, respiration 24; no appetite, but always ready to drink.

To reduce the fever the animal received 3ii doses of quinine three times a day, but without any apparent effect; we then noticed that she was constipated, and she received 3vi of aloes, which acted on her bowels; along with this she received stimulants, tonics and anything to encourage her to eat, such as grass, green clover, etc., but in vain; the animal remained in the same dull condition as before.

Her general condition remained about the same up to the 13th of May inclusive, but on the 14th of May the temperature went up to 103° ; the animal was constipated again; she received 3vii. of aloes, which softened her fæces. After the action of the aloes had subsided the animal received Fowler's Solution in 3ss. doses three times a day, but without avail; the animal did not improve. The lungs were then examined, but nothing abnormal could be observed, except a slight flatness on percussion on the lower part of the right lung, which, however, disappeared again after a few days.

The animal stayed in the hospital, under the above treatment, until the 23d of May, and was then sent into the country to pasture.

On the 28th of June the animal came back in an emaciated and weak condition, and was hardly able to walk. On examination her temperature was found to be $103\frac{2}{3}^{\circ}$, pulse 56, respiration 24; on percussion, flatness on both sides of the lower part of the thorax, and the diagnosis of hydrothorax was made.

To tone up the system the animal received olei morrhuæ 3iii twice a day, and 3ss. doses of digitalis to stimulate the heart. On the 5th of July pulse and respiration became very weak and irregular, the animal refused any kind of food,

but drank freely. The condition on the 6th of July was about the same, and on the 7th the animal ate a little mash in the morning and noon, drank freely and seemed to be somewhat better; but in the evening the animal became worse—pulse 94, respiration 92, and the temperature dropped down to $98\frac{2}{5}^{\circ}$ —and finally died at 2 o'clock A. M., apparently with heart-failure.

A post mortem was held in the morning of the 8th of July, and on opening the thoracic cavity we found that the latter contained about 6 gallons of a brownish-looking fluid; the heart looked externally just like a big lump of curdled milk, showing extensive lesions of pericarditis. Internally the heart looked just as if it were boiled, showing anæmia of the heart, and in the left auricle and right ventricle we found large ante mortem clots. On close examination of the thoracic cavity we found large ante mortem clots in the posterior aorta extending even into the branches of the iliac arteries and its branches. On opening the abdominal cavity we found a clear looking fluid, a dropsical condition, due to weakness and debility of the animal; the liver was of a dark blue color, showing everywhere the lack of circulation and its consequences. The animal apparently died from heart-failure, caused by various clots in the different chambers of the heart and general circulatory apparatus.

EXTRACTS FROM EXCHANGES.

AMERICAN REVIEW.

DOUBLE INTESTINAL INTUSSUSCEPTION IN A DOG.

A Scotch collie dog, in an emaciated condition, had persistent diarrhœa of six months standing. When seen had a prolapsus of the rectum probably about three inches, swollen and inflamed. On palpation is found an invagination of the posterior part of the colon, extending forward about eight inches. External manipulation failing to reduce the prolapsus, the animal was etherized, the abdomen opened and a

double intussusception observed, very extensive and gangrenous, which did not allow of reduction. The last four inches of the small intestine were prolapsed into the anterior portion of the colon, and these two portions were further prolapsed into the posterior part of the colon.—*Veter. Magazine.*

IMPACTION OF THE STOMACH, WITH VOMITION.

A black gelding, 10 years old, was overfed with corn. Taken with colicky pains while in harness, he vomited several times a sour mass, containing some blood, which made the case appear one of ruptured stomach. There were occasional retchings, with partial regurgitation of the stomach contents, violent colicky symptoms, flanks distended, pulse full and cordy, conjunctiva congested, rectum empty.

Chloral, linseed oil and tincture of aconite gave but little relief. Salicylate of eserine produced some of its ordinary symptoms, but no defecation or expulsion of gases; hypodermic injections of atropia, and mustard to the abdomen, gave temporary relief. Later in the day he received an enema of warm water and soap with a drench of sulphate of magnesia, tincture of zingiberis, alcohol and water, which was followed by a passage of fæces and gases within two hours. Recovery followed. The author considered the case as "one of patulency of the cardia," with possibly a spasm of the pyloric sphincter. This, with the distended stomach, allowing the contraction of the abdominal muscles upon it, permitted of the vomiting.—*Ibid.*

TREATMENT OF AZOTURIA.

Dr. L. O. Lusson, of Ardmore, Pa., recommended the following in the treatment of azoturia:

"I make a practice to catheterize every eight hours and administer chloral in one ounce doses when the patient is very uneasy, allowing water *ad libitum*, and turn him over every few hours. I use fresh sheepskin over the kidneys and croup (right side down). If severe pains are present, besides the

chloral, I add one ounce dose every hour for the first twenty-four hours and then every two hours for the next twelve hours, of the following mixture: Extract Buchu, Extract Juniperis and Ammonia Acetatis, equal parts.—*Four. Comp. Med.*

HYOVERTEBROTOMY.

In the March issue of the *Journal of Comparative Medicine*, Dr. W. Dougherty mentions the result he has obtained in a number of cases of suppuration of the guttural pouches by puncture of these through the parotid glands. The name of hyovertebrotomy is scarcely applicable to this mode of emptying the guttural pouches, as it principally refers to the opening of the sacs from above. The author has been successful in all the cases he operated upon but two.

IMMOBILITY FOLLOWING INFLUENZA—RECOVERY.

An interesting case is mentioned by Dr. W. Horace Hoskins of the recovery of brain trouble giving rise to well described symptoms of immobility as sequelæ of influenza, which were relieved by the administration of laxatives. One ounce doses of artificial Carlsbad salts with dram doses of powdered rhubarb, every four hours, brought on noticeable improvement in twenty-four hours and recovery in a few days.—*Ibid.*

ENGLISH REVIEW.

CONSTIPATION IN A LION CUB.

This case, recorded by Mr. J. A. Nunn, of the Lahore Veterinary College, is very interesting, illustrating as it does the effects of confinement even in wild animals, and sometimes the constant requirements of laxatives to overcome them. A lion cub had been tamed and kept until he became too rough in his play, when he was given to the Lahore Zoological Garden. There, in a roomy cage, he soon, however, manifested indications of intestinal ailment. "He was dull, disinclined to move, had lost his appetite, the abdomen was distended, hard, and somewhat tender on manipulation, the

track of the colon distended with fæces, being distinctly felt through the abdominal walls." After being secured the animal received a soap and water enema, followed by four ounces of castor oil. These acted well and the animal was restored to his playful spirits. Half an ounce of manna is, however, given to him twice a week to keep him in good condition.—*Veter. Four.*

PARALYSIS OF THE RECTUM AND BLADDER.

These peculiar cases, though not very common, are not rare to meet, and from their rebellious nature in yielding to treatment, any new case recorded becomes interesting.

This case differs but little from the generality: evident indications of constipation, or unwillingness to pass manure, two or three bits of fæces passed perhaps during twenty-four hours, rectum filled with large quantity of fæces, bladder more or less full. In this case the tail was flaccid. The treatment consisted in the administration of a dose of physic, nux vomica, liniments, blisters over the loins, nerve tonics, even the docking of the tail, all of which seemed to have produced no satisfactory result.—*Ibid.*

FOREIGN BODY IN ŒSOPHAGUS.

Canine practice is assuming such importance with some practitioners that the case of a puppy swallowing a teacup and having it removed without other surgical interference than external manipulations is quite of value. Truly, the teacup was only a child's toy, but nevertheless made the puppy sick. Felt through the skin, it could not be displaced or pushed into the stomach with an elastic bougie. But while the little patient was under the influence of chloroform it could be carefully moved upwards toward the fauces, felt with the index through the mouth, and extracted with forceps.—*Ibid.*

PERIPHYMOSIS IN A DOG—AMPUTATION.

Mr. J. H. Carter reports in the *Veterinary Journal* an interesting case of a fine retriever which had been suffering

with periphymosis complicated with enormous swelling, offensive smell and threatening of gangrene, and was about to be shot by its owner. After several days of careful warm fomentations and tractions of the prepuce, which allowed a return of the penis of about four inches, the case assuming a bad aspect by the gangrenous condition of the part, the author decided to perform amputation, which was done under chloroform. "The prepuce being drawn back as far as the swelling would permit, an incision was made a little behind the line of demarcation and immediately in advance of the anterior extremity of the os penis. The hemorrhage was slight and required no styptic dressings. The prepuce was drawn well forward in advance of the cut end of the penis, and a silk suture inserted at its external orifice." This was removed in the latter part of the day. For the first twenty-four hours the dog was quite ill and took food only after much coaxing. The following day he seemed considerably improved and continued so for a few days, when he was discharged.—*Ibid.*

GERMAN REVIEW.

BY W. V. BIESER, D.V.S.

RUPTURE OF THE UTERUS.

Small perforating wounds of the uterus occur frequently, especially in forcible removal of the foetus. Favoring as they do infectious metritis and endo-metritis, still they are not as a rule followed by evil consequences. More important are the perforating wounds which can occur, as is well known, either in the earlier stages of uterogestation and escape observation, or, as is most frequently the case, at term.

A perusal of the two appended cases will show the truth of these data.

CASE I.—On March 27, 1890, Von G. saw a cow without any signs of labor pains whose liquor amnii had drained off. The cow was standing shaking her tail and constantly looking toward her flanks.

Manual examination per vaginam showed the cervix widely

dilated, the head and feet of the foetus presenting. The introduction of the hand caused labor pains to set in. Assuring the owner that everything was all right, Von G. waited ten minutes, introduced his arm again, but, to his surprise, there was no indication of any presenting part in the cervix. He found a rent in the lower posterior segment of the uterus through which the foetus had slipped. An autopsy upon the slaughtered cow—the circumstances of the case rendering slaughter of the cow necessary—showed the foetus lying in the abdominal cavity and a large rent in the lower posterior segment of the uterus 5 cm. from the cervix; this tear showed in its centre evidences of an old cicatrized rent, from which fresh and smaller bloody tears radiated right and left in all directions.

CASE II.—On December 31, 1893, Von G. was summoned with the intelligence that a cow, which had calved October 24, 1893, had been straining as if to pass something per vaginam, but that nothing had yet appeared. On introduction of the hand into the vagina he withdrew a small foetus with the membranes entire. He then proceeded to wash out and disinfect the uterus; in so doing he found on the upper posterior uterine wall, a rent four finger-breadths wide. As the uterus was entirely empty, the owner was advised not to kill the cow. The patient convalesced nicely and calved normally again on December 7, 1894.—*Schweiz. Arch. Thierhkl.*

HÆMATURIA IN A COW AS A RESULT OF DEGENERATION OF THE SPLEEN.

The patient was a seven-year-old, non-pregnant, well-nourished cow intended for the market. Was found standing in her stall, back slightly arched, voiding a normal quantity of coffee brown urine. Respiration and circulation showed no impairment of function. She partook of food and drink with ordinary avidity. Temperature 39.6° C. A small swelling was found behind the last rib. Pressure on the loins elicited pains which she tried to avoid by drawing in her flanks.

Post Mortem.—Excepting the spleen all organs were nor-

mal. The spleen was enlarged to twice its natural size. The capsule was thickened, infiltrated with blood, stretched, and strongly adherent to the abdominal wall. The pulp was dark red, of soft, pulpy consistency; it welled forth on cutting in the form of a dark-brown pulp. In the spleen a blood extravasation the size of a pea was found.—*Schweiz. Arch. Thlk.*

MEAT INSPECTION IN BERLIN.

In the public slaughter houses of the central abattoir, there were 9,212 cattle, 13,061 calves, 30,515 sheep, 49,785 swine killed in Berlin during the month of April. Altogether 102,573 animals, as against 108,702 in April 1893, a decrease of 6,129; 2,598 cattle and 7,824 sheep less, 1,417 calves and 2,876 swine more in April, 1895; than in April, 1893. Of this number 552 were condemned as unfit for human consumption; this number includes 231 cattle, 35 calves, 5 sheep, and 281 swine. The number of individual parts and organs condemned amounted to 7,661 (of these 2,944 from cattle, 22 from calves, 1,184 from sheep, 3,511 from swine); among this number were 1,434 lungs and 860 livers. In the city stations for the inspection of imported fresh meat 16,463 quarters of beef, 15,401 calves, 3,347 sheep and 11,715 swine were registered. Of these 63 quarters of beef, 37 calves, 10 sheep, 17 swine, 38 organs and parts were condemned.—*Thierarzt Woch.*

SOCIETY MEETINGS.

SPECIAL MEETING OF THE NEW YORK STATE VETERINARY MEDICAL SOCIETY.

At the special meeting of the New York State Veterinary Medical Society, held in the lecture room of the New York College of Veterinary Surgeons, New York City, on June 11th, 1895, the roll call showed a large number of veterinary surgeons present. The reading of the minutes of the previous meeting was dispensed with. The President, Dr. R. S. Huidekoper, explained in a few remarks the reason for calling this special meeting. He said that it was in order to comply with

a clause in the bill which had recently become a law by being signed by the Governor, wherein the New York State Veterinary Medical Society are required to nominate ten members of their society, whose names are to be transmitted to the Board of Regents, who, according to the law, are to appoint five members out of the ten submitted to them: the five members appointed to act as a State Board of Veterinary Examiners, and to hold office for five years.

The following are the names of the ten members who were chosen by ballot of the members present to be submitted to the Board of Regents for them to make their appointments from: Drs. R. S. Huidekoper, Nelson P. Hinkley, Claude D. Morris, William Henry Kelly, John Wende, W. L. Baker, Arthur O'Shea, John A. Bell, H. D. Hanson, and Prof. James Law.

There was also a resolution offered giving notice to the Society that at the next annual meeting there would be a resolution offered to amend the by-laws so as to read that all legally registered veterinarians in the State of New York be eligible to present their applications to become members of the New York State Veterinary Medical Society. This resolution was accepted and ordered spread on the minutes. The meeting then adjourned until the next annual meeting, which will be held in the lecture room of the New York College of Veterinary Surgeons, No. 154 East 57th Street, New York City, Sept. 5th and 6th, 1895.

NELSON P. HINKLEY, Secretary.

SIXTH ANNUAL MEETING OF THE NEW YORK STATE
VETERINARY MEDICAL SOCIETY.

The Sixth Annual Meeting of the New York State Veterinary Medical Society will be held at the lecture rooms of the New York College of Veterinary Surgeons, No. 154 East 57th Street, New York City, on Sept. 5th and 6th, 1895.

The programme for the two days' proceedings will be well filled with interesting and instructive events. There will be the election of officers, the President's annual address,

the report of the Secretary, Treasurer, and of the several Standing Committees, including that of the Committee on Legislation, which have done such glorious work in the past year by securing the passage of our proposed bill, which regulates the practice of Veterinary Medicine and Surgery in this State, and places this branch of the sciences on the same footing as that of our medical brethren. There will also be reports from the several County Secretaries.

Several members of the Society have signified their willingness to prepare essays on subjects of importance, which they will read and defend. The Committee of Arrangements have secured ample hotel accommodations for all attending members close by to the place of meeting. The New York County Society have also made arrangements to entertain the members of the State Society while in their city. The Committee of Arrangements have also under consideration the feasibility of setting apart a half day of our meeting for the purpose of having a practical demonstration, in the way of having several operations performed on the live subjects, such as arytectomy, neurectomy, and cunean tenotomy, and any other operation that will be interesting and instructive to the members. The officers of the Society are making every endeavor to make this the most successful, instructive, interesting, and best attended meeting that has been held in the history of the Society. Besides the above mentioned events of this meeting, there will be other important and interesting proceedings to bring before the members of this Society for them to discuss and act upon, such as the changing of the by-laws, the explanation of our recently passed law regulating the practice of veterinary medicine in this State, the publishing of a New York State veterinary register, the election of delegates to the United States Veterinary Medical Association Meeting, and several other matters of importance and interest to every veterinarian in this State, will be taken up, discussed and acted upon. It is expected that there will not be a dull hour on the programme of the meeting of this Society. All members and all qualified veterinarians are cordially invited to attend. Printed notices, with programme

will be sent to every qualified veterinarian in this State. Blank applications for membership can be had by addressing the Secretary, No. 395 Ellicott St., Buffalo, N. Y.

NELSON P. HINKLEY, Secretary.

VETERINARY MEDICAL ASSOCIATION OF NEW YORK COUNTY.

The regular meeting of the Veterinary Medical Association of New York County, was held on Tuesday evening, June 4th, at 8:30 o'clock, with President Huidekoper in the chair.

On roll call the following members responded to their names: Drs. Amling, Bieser, Bretherton, J. J. Cattanach, J. S. Cattanach, Caulfield, Dickson, Delaney, Ferster, S. S. Field, Fagan, Foy, Giffen, Gill, Glover, Huidekoper, Hanson, Jackson, Knott, Neher, O'Shea, Ryder, Sherwood, Turner, Wolters and Wellner.

The minutes of the last meeting were read and adopted.

Dr. Gill, Chairman of Board of Censors, reported favorably the names of Drs. R. S. MacKellar and F. Hueppe for membership. He also reported favorably the name of Hon. Timothy D. Sullivan for honorary membership of the Association.

Moved and seconded that the report be accepted. Carried.

Dr. Turner, Chairman Committee on Certificates, reported by exhibiting a copy of certificate adopted by the committee, the price being \$100 for two hundred and fifty on parchment.

Moved and seconded that the certificates be numbered. Carried.

Moved and seconded that the certificates have a seal. Carried.

After a number of slight alterations had been made upon the copy exhibited, it was moved and seconded that the copy exhibited with the corrections made be accepted. Carried.

Moved and seconded that the committee be continued with power to procure the certificates and have them signed and ready for delivery at the next regular meeting in September. Carried.

Dr. O'Shea read the report of the Judiciary Committee, giving a detailed account of the work done at Albany by the

committee, which report is now on file. He then read a list of the veterinarians registered in New York and Kings Counties, corrections being made by the members as each name was read; several were found to have moved from the State, several dead, and some unknown.

Moved and seconded that the report be accepted. Carried.

Moved and seconded that a letter of thanks be sent to the Senators and Assemblymen who aided the Association at Albany. Carried.

Moved and seconded that the Reception Committee invite the three Assemblymen and two Senators who introduced and aided in the passage of the bills at Albany to the State meeting, and also to the reception during the same. Carried.

Moved and seconded that the counsel of the Association be invited to attend the same. Carried.

Moved and seconded that the committee be continued with power to act. Carried.

Moved and seconded that the by-laws be suspended. Carried.

Moved and seconded that the Secretary cast a ballot for Drs. MacKellar and Hueppe. Carried.

The Secretary cast a favorable ballot for both gentlemen and they were declared members of the Association.

The election of Hon. Timothy D. Sullivan to honorary membership then took place, the election being unanimous.

Moved and seconded that the President appoint a committee to frame a proper testimonial for Dr. O'Shea. Carried.

The President appointed Drs. Cattnach, Sr., Field and Giffen as such committee.

Moved and seconded that the Secretary be empowered to have the constitution and by-laws printed. Carried.

Meeting adjourned.

J. E. RYDER, D.V.S., Secretary.

CALIFORNIA STATE VETERINARY MEDICAL ASSOCIATION.

On June 12th a meeting of the California State Veterinary Medical Association was held at the Commercial Hotel Stockton, Cal.

The meeting was called to order by President Orvis, at 3:30 P. M.

Upon roll-call the following members responded: Drs. Orvis, Eddy, Fox, Spencer, Sr., Lemke, Williams, Hogarty and Archibald. Visitor, Dr. Eddy, Sr.

Letters of regret were read from absent members.

The minutes of the previous meeting were read and approved.

The Board of Examiners reported favorably on the application of C. L. Megowan, whereupon, on motion, he was unanimously elected to membership.

Under the head of unfinished business the election of a delegate to the next meeting of the national organization was taken up, with the result that Dr. R. A. Archibald was unanimously elected to so represent the Association. Owing to the fact that Dr. Archibald was elected a delegate he refused to collect the assessment levied at last meeting for the purpose of defraying the delegate's expenses. Dr. D. F. Fox was appointed to collect the assessment.

Under the head of reading of papers, etc., and discussions, Dr. Lemke was called upon to entertain the meeting, which he did by giving a review of the work he was doing toward the prophylactic treatment of anthrax in the central portion of the State under the direction of the Pasteur Anthrax Vaccine Co. He stated that the above named company had employed him for the purpose of determining to what extent anthrax prevailed in California, with a view of commencing a warfare on the disease by means of vaccination. He said he desired the co-operation of every practitioner in the State, more especially the members of the Association. He further stated that he had investigated the disease to a considerable extent and he had about come to the conclusion that there was a difference between the disease and the true anthrax; the mortality was not so great. He wished to get an expression from the members present who had had some experience with the disease as to their opinion of the nature of the disease. He was unwilling to vaccinate until he was thoroughly convinced of its true nature. He requested the members to

prepare specimens of animals that had died from the disease and forward them to him so he could have them submitted to a microscopical examination. He went on to give some statistics and data regarding the loss of live stock, the financial loss and the mortality of the disease.

Considerable discussion followed Dr. Lemke's remarks, and the Doctor was subjected to a rigid cross-examination by most of the members present, all of whom expressed a willingness to assist him by every means in their power.

Then followed the reading of a very instructive paper on bronchitis, by Dr. D. F. Fox, who described the different phases of the disease and the different methods of treating the same.

Dr. J. H. Eddy followed with an excellent and carefully prepared paper on the "Circumstances which Modify the Action of Medicines." Both subjects were thoroughly discussed by the members.

On motion of Dr. Spencer a vote of thanks was tendered the essayists for the able and masterly manner in which they had entertained the meeting.

The Chair appointed Drs. Spencer, Jr., Skaife, Pierce and Shaw as essayists for the next meeting.

Dr. R. A. Archibald submitted the following resolution:

WHEREAS, The live stock interests of this State are suffering from the malignant influences of contagious and infectious diseases, and

WHEREAS, The health of the public of this great State is also jeopardized by the presence of said contagious and infectious diseases which affect the domestic animal, and

WHEREAS, We, the members of the California State Veterinary Medical Association, realizing that this state of affairs is wholly due to the fact that there are no laws on the statute books of this State sufficiently adequate to control the ravages of these contagious and infectious diseases. Therefore, be it

Resolved, That the President be and he is hereby authorized and requested to appoint at the next meeting of the Association—which will be held at Sacramento—a committee consisting of three members, whose duty it shall be to wait on or communicate with the Governor of this State, with a view of prevailing upon him to appoint a Commission, to consist of one veterinarian, one physician, one lawyer, one dairyman and one stockman, who shall receive no compensation, and whose duty shall be to devise ways and means whereby the public health and the live stock interests of this State may best be protected from the ravages of contagious and infectious diseases, such as anthrax, tuberculosis, glanders, hog cholera, etc.

Considerable discussion followed the presentation of the

resolution, and the author was highly complimented for his ingenuity in drafting the same.

Upon motion of Dr. Spencer, Sr., the resolution was unanimously adopted.

There being no further business to come before the meeting, on motion of Dr. Fox, the by-laws were suspended and the meeting adjourned to meet in Sacramento on Tuesday, September 10th, 1895.

On Thursday, June 13th, the members of the California State Veterinary Medical Association assembled by invitation of Dr. C. B. Orvis at his infirmary at 258 Lafayette Street, Stockton, to participate in a clinical entertainment.

The first operation on the programme was the reduction of a ventral hernia by Dr. H. A. Spencer, assisted by Dr. Archibald. The operation was the radical one for the cure of a hernia and was performed under strictly antiseptic and aseptic rules.

The next operation was performed by Dr. Lemke. This was a case of an old, long-standing fracture of the scapula at its upper third, from which a fistula resulted, which necessitated the trephining of the scapula.

Other operations of minor importance followed, closing the entertainment, which was voted an entire success by the members present.

R. A. ARCHIBALD, Secretary.

NEW HAMPSHIRE VETERINARY MEDICAL ASSOCIATION.

A special meeting took place in Concord, at the Eagle Hotel, on June 13.

Dr. Lilico, of Dover, was admitted to membership.

A paper was read by Dr. Pope on "The Diagnosis of Tuberculosis."

A discussion followed, and the meeting adjourned until the first Tuesday in October.

L. POPE, Jr., Secretary.

VETERINARY HONORS.

DR. A. CHAUVEAU.

On the occasion of the fête nationale of the 14th of July, Dr. A. Chauveau, Member of the Institute, General Inspector of the Veterinary Schools of France, received the decoration of *Commandeur* of the *Legion d'Honneur*. This great honor granted to Dr. Chauveau reflects on the entire profession in France, where veterinary science holds such a high standing, and is a national acknowledgement of the great services rendered by him through his various scientific works, especially the last, viz., the application of experimental physiology to medical researches.

BIBLIOGRAPHY.

THE CAT.—A guide to the classification and varieties of cats, and a short treatise upon their care, diseases and treatment, by Dr. R. S. Huidekoper. With over thirty illustrations.—*D. Appleton & Co., New York.*

Very appropriately dedicated to the honorable President of the American Society for the Prevention of Cruelty to Animals, John P. Haines, Esq., the well-written and handsomely illustrated little book of Dr. Huidekoper comes to fill a want that all who love cats will appreciate, and that all veterinarians will enjoy to read. Though it is concise, the author has collected in the six chapters into which the book is divided, much interesting information. The zoological position of the cat family with a descriptive list of the various feline species, an outline of the anatomy of the domestic cat, the origin of the domestic cat and its varieties, the care and diseases of the cat, occupy the first five or principal chapters, while the therapy, the mode of destroying animals whose days of usefulness are gone, with the etymology, the synonymy and the emblematic signification of the cat completes the handsome gathering of the one hundred and forty pages, which are presented to the public by the house of D. Appleton & Co. in their usual manner.

CORRESPONDENCE.

DR. SCHWARZKOPF TO DR. SALMON.

Editor American Veterinary Review:

DEAR SIR.—Dr. Salmon's latest on meat inspection in your May issue is so saturated with official self-confidence, and his language so much wanting of literary decency, that I must decline to further discuss this subject. Whenever the Doctor loses his temper, he goes to juggling with terrifying words and beating the drum. This is, I suppose, what he means by his "rather pointed replies which he has found it necessary from time to time to offer." Sure enough, the Doctor is renowned the two continents over for his "pointed replies," which are so full of amusing bluffness, and so lacking in objective clearness.

While I shall gladly leave the Doctor in full possession of his ideas on meat inspection, I must object to his flimsy attempt to stamp myself and my opinions as "foreign." True, I am a German by birth and education, and I offer no apology for this fact. But the country of the buffalo, the Indian and the other civilized Americans has been the land of my dreams since my youth. Circumstances have so shaped my life that I have become an American not only by consent of law, but also in spirit and sentiment. I also believe in patriotism, but I have no use for that fanaticism which employs race-prejudice as an argument in professional discussions. Furthermore, I believe that the pages of THE REVIEW are for our American veterinarians, and that Dr. Salmon's fear that "people in other countries will read them," has some pathological condition at its bottom.

OLOF SCHWARZKOPF.

OBITUARY.

DR. WILLIAMSON BRYDEN.

This well and favorably known Veterinarian of Boston died there on June 28th after an illness of about thirteen months, the immediate cause of death being apoplexy. Dr. Bryden was born in Scotland and came to this country when

a boy. He was graduated from the Montreal Veterinary College (now a department of McGill University) in 1871, where for several years he served as one of its board of examiners. He was a past president of the U. S. Veterinary Medical Association, also a charter member and past president of the Massachusetts Veterinary Medical Association, and an honorary member of the same when he died. For many years he was an inspector of cattle for British steamships from the port of Boston, and known personally to most members of the profession throughout the country, and to others, by his frequent contributions to our journals. He will be remembered by many young practitioners as a good friend and ever ready adviser. He was a good man, whom we esteemed highly, of a genial and hospitable nature, of marked intelligence, and an able student and practitioner. Dr. Bryden was well up in Masonry, and will be greatly missed by a large circle of friends and acquaintances.

JOSEPH F. AUTENREITH, D.V.S., JERSEY CITY, N. J.

We regret to announce the death of Dr. Autenreith, which occurred at his residence, 780 West Newark Avenue, Jersey City, N. J., recently, after a lingering illness, from typhoid fever. The deceased graduated in the class of 1882, from the American Veterinary College, and had succeeded in building up a large and remunerative practice, having also held a number of public positions of a professional nature, being for several years consulting veterinarian to the Jersey City Board of Health, and veterinarian to that branch of the A. S. P. C. A.

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AMERICAN VETERINARY REVIEW.

SEPTEMBER, 1895.

EDITORIAL.

NEW YORK STATE VETERINARY EXAMINING BOARD—A REMEDY YET REMAINS.—In the August issue of this journal we considered, at some length, the action of the State Veterinary Society in giving to the Board of Regents a list of ten names, that they might make a selection of five, to constitute the new Board of Veterinary Medical Examiners under the recent law placing the licensing of candidates from the various seats of learning in the State in the custody of the Regents.

We were disposed to criticise the action of the State Society as a serious blunder, though not a thoughtless mistake, as it was shown to have been accomplished after deliberation, and in the face of a strong opposition—so strong, indeed, that with the morning attendance it was resolved to exclude teachers from the list; and those members who had attended the meeting for the purpose of voting against the admission of teachers upon the Board felt that their object had been accomplished, and all but one or two departed from the hall and did not again return. When the Society reassembled after recess a new count of noses took place, which revealed the fact that the opponents were in a minority, and then followed a transaction which we are glad to say only a few members of the profession in New York State were participants in. *ELEVEN MEMBERS* (seven of whom were placed in nomination and four of whom have actually been appointed) proceeded to rescind the action of the full morning meeting, and had the whole morning session expunged from the minutes, so that upon the books of the Society it does not appear that there

was any morning session. These eleven men, all apparently friendly to the same cause, resolved themselves into a mutual admiration society, and one nominated the other, which was duly seconded and immediately carried. So few were they that they finally began nominating in bunches of three at a time; and, with two exceptions, they each received ten votes. The list of names that had been selected when the full meeting was in session was thus thrown out, and a new list of names placed in nomination, which included certain teachers in veterinary colleges in this State, whose students would come in competition with those from other schools before the Board of which they were to be members. The action of that special meeting, therefore, had the appearance of being an attempt, by certain interested schools or representatives thereof, to gain control, or representation at least, upon the State Board of Examiners, for by no other course of reasoning can we reconcile the desire of these teachers to become examiners, especially when they or their friends were willing to resort to such a questionable procedure as is disclosed by the facts. Certainly, a sense of fairness and a desire for impartiality would have constrained a declination of the use of their names. Having, however, gone upon the list that was sent to the Board of Regents, it appeared to us that that body of ethical gentlemen would—if they were aware of the status of the individuals whose names had been submitted to them—settle the question of college representation among the examiners by using their prerogative of selecting those who were not directly interested in particular schools. We called upon them to take this step, in all fairness; but we cannot tell whether our appeal would have had the desired effect, for before that issue of the REVIEW left the binder's hands the appointments were belched forth from Albany, as announced in the following dispatch to the N. Y. *Tribune* of July 26th:

Albany, July 25.—The State Board of Veterinary Medical Examiners, appointed by the Board of Regents of the State University to arrange for examinations for license to practice veterinary medicine in this State, held its first meeting in the department of the Board of Regents this afternoon.

The following are on the Board: Prof. James Law, of Cornell; Dr. R. S. Huidekoper, of New York; Dr. N. P. Hinkley, of Buffalo; Dr. Wm. Henry Kelly, of Albany, and Dr. C. D. Morris, of Pawling. The Board organized by the selection of Prof. Law as President and Wm. H. Kelly as Secretary. The following was the designation of the five chairs: Dr. R. S. Huidekoper, anatomy and surgery; Dr. C. D. Morris, physiology and hygiene; Dr. W. H. Kelly, obstetrics; Dr. N. P. Hinkley, chemistry, therapeutics and materia medica; James Law, pathology, diagnosis and practice.

And thus we stand: The law has been passed; the State Society has furnished the Regents with the prescribed ten names; and they have appointed the five *disinterested* veterinarians who are to hold office as examiners.

We declare in all seriousness that the placing of these teachers upon that Board, and by the contemptible subterfuge that was employed in that disgraceful special meeting, is a blot upon the good name of the State Society which the members at large should not be willing to pass unrebuked. They have been used as a catspaw to further the selfish ends of a few men; and if she countenances such transactions, her days of usefulness are at an end, as all men who stand for fairness and the good of the whole profession as against a clique, must see that its objects have been perverted and its influence used for the personal aggrandizement of those who are temporarily in control.

And this is what the promulgators of this law have labored for! Surely, it was a boomerang; and its rebounding blow is more violent than we anticipated. It is a repetition of the glacier climber, who ascended one foot and slipped backwards two feet—except, in this instance, the backward progression is a thousand feet.

The faculty of a school could not be trusted to pronounce upon the merits of a student who had studied within its walls for three long years, whose character and capabilities the teachers had every opportunity to study; but it is taken out of their hands and placed in charge of—who? Of a teacher in a rival school from which the candidate comes, whose own personal interest and pride is vested in his own institution,

and the success of whose students before the Board would add to the reputation and, consequently, to *the financial benefit of the source from which he receives his salary as a teacher*. The success of his own students would shine the brighter if the students from the rival schools were less successful. And so human instincts would tend to make this Board unfair.

If we assume that such considerations do not enter into the question—that the examiners do not allow individuals nor their sponsor to influence the decision upon the merits of the candidate—the whole principle is wrong for another important reason. Every medical man who is capable of doing any independent thinking knows that he has obtained views at variance with the teachings of his text-books and preceptors, from personal observation and experience; and, if he be a teacher, he will, in the course of a lecture season, instill his ideas into his students, and thus they become converts to his peculiar views. The students from other schools may have received as careful training, and even better, than his own; but it is upon a different line of reasoning, and, possibly, the correct line. It is self-evident that of the two classes of answers which that examiner will receive, the higher rating will be accorded to that student who has absorbed his own intuitions, even though they be wrong or fanatical; and thus the other student has been unjustly treated by a biased examiner.

Every person, whether a scientific man or an intelligent layman, will regard this Board of Veterinary Examiners as a biased and interested body of men, who will do more to retard veterinary progress and send it back from whence it emerged some fifteen years ago, than any lack of legislation could possibly have done.

But the case is not hopeless. It is true, the appointments have been made, and legally entitles the recipients to hold office for the period of their incumbency. There is, however, a quick, absolute and effectual remedy. Almost every progressive veterinarian, especially he who earnestly desires that *his* profession shall rise to the plane of our sister science of human medicine—which does not permit teachers in interested schools to sit in judgment upon rival schools—is anxious to do

some individual act which shall assist in this uplifting, and to be a benefit to his colleagues and the science of his adoption. More especially should this be expected in those who stand out as teachers of the embryonic veterinarian, and as deontological examples. And just here is the remedy. Certainly those who have been placed in this embarrassing position by the combined or concerted action of the State Society and the Board of Regents, can do no more graceful nor magnanimous service for the profession they have labored so long for than to *at once send in their resignations* to the source from which they received the compliment of an appointment, showing at once to the whole veterinary profession that they are unwilling to harass and jeopardize the future of veterinary medicine for the sake of a little cheap personal notoriety and the opportunity to benefit their own school at the expense of the great cause of veterinary science in America.

UNITED STATES VETERINARY MEDICAL ASSOCIATION.—The thirty-second annual meeting of this association will convene at Des Moines, Iowa, on Tuesday, September 10th, and remain in session on Wednesday and Thursday, 11th and 12th. It is expected that more members will be in attendance at this meeting than at any of its predecessors, and that many of the practitioners of the Northwest will apply for membership in the National body. We have, in a previous issue, given some good reasons why the annual meeting of this association should be held in some centrally located Western city, rather than the extreme East or extreme West, and we believe this year's meeting will show the wisdom of the *Comitia Minora* in selecting Des Moines.

The programme is full of promise, for many interesting subjects are outlined in the papers to be read, and the Disease Committees will have full reports, while the educational problems for discussion will partake of specially interesting and important features.

We have received from Secretary Dr. Leonard Pearson the full programme, which we print on another page, and which will be found teeming with the good things that await those who are so fortunate as to be able to be present.

We bespeak for this year's meeting of the U. S. V. M. A. a full attendance, interesting papers, liberal discussions, abundance of good fellowship, and plenty of social enjoyment.

MEETING OF THE FACULTIES.—We call attention to the meeting of the Association of Veterinary Faculties of North America, which will take place on the occasion of the convening of the National Association at Des Moines, Iowa, occupying the evenings of the first two days. Elsewhere we print the programme, as furnished by Chairman Schwarzkopf, which displays a brilliant array of interesting subjects and interesting speakers. Dr. Detmers, of Columbus, in speaking upon the subject of "State Boards of Veterinary Medical Examiners and their Relation to Veterinary Colleges," especially has an opportunity to engage the members with a live topic of the most vital interest to not only every association member in attendance, but every veterinarian in America, for the recent action of the Board of Regents of the State of New York, at the instigation of our own State Society, is a strike at the very foundation of the profession of veterinary medicine. Let the Society of Faculties enter its protest in the form of ringing resolutions of condemnation, so that the Regents may at once see the feeling of the colleges on their unprecedented action. If this were the only subject for discussion it would render this a most important meeting, but there are many others of much interest and profit.

PROF. LAW'S CONNECTION WITH THE EXAMINING BOARD.—We have received and take much pleasure in printing upon another page, a long letter from Prof. James Law, of Cornell University, explanatory of his attitude in relation to the State Board of Veterinary Examiners, to which he was recently appointed by the Regents. We disclaim, and Prof. Law does not charge, any intention upon our part of uttering a word which shall be construed into a personal allusion, but we feel that such a cruel injustice has been inflicted upon the rank and file of the profession, and its future members, that our language is plain and unadorned by anything which is liable to obscure our meaning.

TO OUR READERS.—From the success which has attended the reorganization of the REVIEW in its business department, and its augmented corps of contributors, we feel that the veterinary profession thoroughly appreciates the work which this journal has been doing for so many years, and which she is better prepared to carry on now than ever before. We recognize the fact, however, that much interesting matter is escaping our readers, through the failure of themselves to act upon our oft-repeated request to report their interesting cases for the benefit of their fellow practitioners, and to record their views upon professional subjects as gained by observation and experimentation. We are pleased to offer the pages of the REVIEW for this purpose, for the report of the proceedings of all society meetings, news of a professional nature, and all other matters of direct interest to the great clientage which we are endeavoring to assist.

ORIGINAL ARTICLES.

THE PREVENTION OF TUBERCULOSIS BY THE USE OF INDIVIDUAL STALLS.

By GEORGE N. KINNELL, M.R.C.V.S., Pittsfield, Mass.

A great deal is being written and spoken and done in regard to the problem we have before us in dealing with and suppressing the disease tuberculosis among our dairy animals. The wisdom and necessity of some definite and radical course of action is admitted by everyone who has taken the trouble to acquaint himself with the most ordinary features of the nature and prevalence of the malady. That it has existed among our cattle for a long time we know, and, like a fire, gathering strength as it spreads. We know that of late years the disease has gained gigantic proportions, and is rapidly undermining and ruining the largest herds of our finest and most valuable neat stock.

In this commonwealth the past year has witnessed the inauguration of a campaign of extermination of the diseased

animals, and so far as the work has progressed it has received the endorsement of a large majority of our citizens. So far so good. It is a first essential step towards our goal. But, after all, it is only one step. Of itself it is but a temporizing measure and gives us no assurance or hope of being even an approximately final settlement of the difficulty. Affected animals are by no means the only source from which healthy ones contract the disease. We still have a constant supply from the diseased human subject against whom no quarantine restrictions have yet been devised. With a continuance of our present system of housing stock and attending to them, if all the tuberculous animals in the State were killed and buried to-morrow it would not be more than a few years before we would again have an appreciable amount of tuberculosis, and in a few years more than that we would find ourselves in practically the same predicament we are in to-day. In order to be successful the war against tuberculosis must be waged along the whole line; and until such owners can come to realize the necessity of keeping their cows under entirely different conditions than at present obtain, and until the medical profession can educate the public mind to an appreciation of the necessity of applying to diseased persons a degree of quarantine at least approximately equal to that enforced against diseased cows, there will be tuberculosis, and to spare, both among cows and among people.

In the suppression of this disease there are three essential points to be borne in mind.

1st. That we shall have reliable facilities for recognizing the disease.

2d. That we shall have the power to slaughter diseased animals when discovered.

These two points we can dismiss with a word. Our facilities for diagnosis are all but perfect. In tuberculin we have a test harmless to healthy animals, and as to diseased ones not only wonderfully but fearfully exact. The power of slaughter we already have, nor need we fear that it will ever be withdrawn.

But there is a third feature more important, far reaching

and practical than all the rest, a feature which as yet has hardly received recognition, far less the adoption of any adequate provisions for its correction, viz., the eradication of those conditions which make tuberculosis possible, or rather, I should say, those conditions which make the continuance of the disease an absolute certainty.

Of all the various much-talked-of causes of tuberculosis, whether they be hereditary predisposition, system of breeding, heavy feeding, forced milking, filth, bad drainage or any of the many which can be mentioned, there is not to my mind one or half a dozen put together which in any way approach in harmfulness the injury which is caused by the almost universal system which obtains in the arrangement of the ordinary cow stall. It would baffle the ingenuity of man to contrive a system which would be better calculated to ensure the spreading of a contagious pulmonary disease. There the creatures stand shackled side by side and cheek to cheek, anchored to one spot week in, week out, month after month, breathing and rebreathing the same air, coughing and expectorating into each others faces. What wonder that we have tuberculosis in our herds, and what marvel that it spreads?

It has been proved time and again that once the disease gains a foothold in a herd, it will progress as rapidly in the cleanest and best ventilated barns as it will in the dirtiest and least cared for. I do not wish to be understood as decrying the necessity for cleanliness and ample cubic space, but I do claim that their importance is altogether secondary to another requirement which is hardly ever observed, viz., the necessity of to some extent isolating the individuals of a herd from each other.

It is a common saying that tuberculosis is a highly contagious disease. I question the statement very much. My experience leads me to believe that its range of infection is very limited indeed, probably not more than a few feet at the most. For instance, the spread of the disease among animals kept out of doors is practically unknown; or, in other words, diseased and healthy animals can herd together in the

same pasture with comparative impunity. But, further, let me illustrate what I say by giving what has been a common experience with me in testing diseased herds with tuberculin. Let us suppose we have a herd of seventy-five cows in which the disease has been in existence four or five years, and let us suppose that twenty or twenty-five are diseased. We do not find the diseased subjects sprinkled promiscuously through the herd, here one and there one. No, we find them in clumps and batches, here four or five standing side by side, and there, eight or ten stalls further along, another batch of four or five more with an occasional isolated case between. But let us go further and examine the members of each batch individually. On post mortem examination we find that almost invariably there is in each batch one animal in which the disease is very much more advanced than in any of the rest, and the lesions of much longer standing. Is it not reasonable to say that the case of long standing is the animal from which the other members of the group received their infection? But the breath and infection from this creature were circulating all over the stable in common with the breath of all the other animals in it. If the disease is so far reaching and infectious, why is it that it did not more generally affect the other members of the herd, and why so especially those in the immediate vicinity of the animal worst affected? Of course, in a herd where the disease is of very long standing and great extent, as, for instance, when eighty or ninety per cent. are diseased, and where healthy animals are the exception, this patchy, clumpy feature cannot be recognized.

In September, 1894, at a meeting of the International Congress of Hygiene and Demography, held in Budapest, Professor Bang, of the Veterinary College in Copenhagen, read a paper giving the result of an experiment made at the instance and expense of the Danish Government, by which he demonstrated that the spread of the tuberculosis in a stable could be prevented by such a simple device as the erection of a board partition between the diseased and the healthy animals. And it was not an experiment on a small

scale either. The herd consisted of two hundred and eight (208) cows of the red Danish breed, besides bulls, heifers and calves. By the tuberculin test it was found that eighty (80) per cent. of the cows, forty (40) per cent. of the bulls and forty (40) per cent. of the heifers and calves were diseased. After a careful disinfection, the diseased and the presumably healthy animals were put at opposite ends of the stable and a wooden partition erected between them. This was done in 1892, and since then the healthy part of the herd has been tested every six months—in all, four times. By the second test ten (10) per cent. reacted and were at once put with the originally diseased part of the herd; six months later they were again tested and only one (1) animal in one hundred and seven (107) reacted, while six months later the test revealed only two (2) animals in one hundred and twenty-two (122) suspected of tuberculosis. The calves from the diseased cows were, as soon as born, taken and put with the healthy part of the herd. The milk from the diseased cows was used for rearing the calves, but before being fed to them it was heated to a temperature of sixty-five (65°) centigrade. He concludes by saying:

“It therefore seems to me to be demonstrated that it is possible to rear a healthy herd on a farm where there is an infected herd, the two being separated by a wooden partition, and that this will prove successful even when the calves from diseased cows are reared.”

Professor Bang thinks the reason that ten per cent. among the presumably healthy animals were six months later found to be diseased was because the separation between the two portions of the stable must have been incomplete. I am inclined to think that in this he is probably in error. In all likelihood the animals were diseased at the time of the first test but required a second test to develop the reaction. Among diseased cattle there are always some that do not react to a first test, and the number which do not react is very nearly eight (8) per cent. Consequently, the fact that he found a number more on the second and third tests is readily understood and in no way invalidates the fact that

a wooden partition is enough to limit the spread of the disease in a herd.

Why cannot this system be carried to greater length and applied all round? Why not separate each cow from her neighbors by a partition running direct from the floor to the ceiling; or, in other words, have an individual stall for each animal? Over each cow's head let there be a ventilating shaft at least fifteen (15) inches square. These shafts could be so arranged that every four or six of them would run together into a common shaft to be carried up through the roof.

It may be argued that the isolation thus obtained would be very incomplete, that the poison-laden breath from a diseased subject could still pass back from the creature's head round the ends of the stall and up into the stalls of the adjoining animals. Very true, but the chances of its doing so, and the extent to which it would do so are immeasurably lessened by the presence of the partitions and the ventilators; and besides, in a stall of ordinary depth, before it could reach the next cow's head it would have to pass a distance of at least ten feet, and this, as we have seen, is probably further than the disease germ can be carried free in the air and retain its potency.

My first ideas of this system of construction were obtained from examining a cow-stable on the farm of Mr. John Sloane, of Lenox. This stable measured seventy feet in length, fourteen in breadth, and was seven feet from floor to ceiling. It was divided into fourteen stalls. This gives a total capacity of 6,860 cubic feet, and after making allowance for partitions, approximately 480 cubic feet per animal—not a very large allowance surely. The stalls were so arranged that each animal was shut off from direct communication with those on either side by partitions consisting of double thicknesses of matched boards running right up to the ceiling. The stalls were also boarded up in front but running the entire length of the row, and on a level with the cows' heads were folding doors which opened downward into the driveway of the main barn, and through these doors the ani-

mals were fed. There were no special provisions for ventilating, and the floor being of wood, and old, could not be kept more than moderately clean. And yet this herd, although it had been exposed to contagion, was by the tuberculin test found to be healthy. The history of it is both interesting and instructive. The fourteen animals kept in this stable had been owned on the place for several years. All of the summer and fall of 1894 they went in the same pasture and in the same yards with six other cows which were brought from the State of New York. It was subsequently found that the herd from which the six cows came was a perfect hotbed of tuberculosis. Consequently, in January of this year, Mr. Sloane had the entire herd tested with full doses of tuberculin. Every one of the six new cows reacted, but not one of the original fourteen. On slaughter, five of these six cows were found extensively diseased, two of them being extremely bad. One of these two worst cases was a cow which had been exhibited and had taken a first premium at the World's Fair, and must have been far gone with the disease at the time of her exhibition.

This feature of having individual stalls for individual animals ought in the construction of a stable to take precedence over every other consideration. While the plan I have suggested is open to criticism on the ground of not being complete enough, yet it is probably as complete as is practicable, is an immense improvement over any other system in general use, and has to recommend it the fact that it can be applied to any of the stables at present in existence, and that at a comparatively trifling cost.

In regard to the matters of cubic space, ventilation, light and drainage, there seems to be among stock-owners no clear conception of what is fit and necessary. The whole matter seems to be in a state of fog and chaos, and the good features which are occasionally met with seem to be more the result of chance and whim than of well directed and intelligent plan.

The Board of Health regulations of the City of Boston, as applied to dairies, require the allowance of 1,000 cubic

feet per animal. Dr. Parker, of Haverhill, found from examination of twelve dairies in the vicinity of Boston that the average cubic space per cow was 522 cubic feet, and this may be taken as a fair average of the stables throughout the State. Of course the amount of cubic space necessary varies very much with the effectiveness of the means of ventilation, but even with the best ventilating facilities it is never advisable to allow less than 800 cubic feet per cow, and the allowance of two or four hundred more would, if erring at all, be doing so on the safe side.

In arranging for ventilation the features to be provided for are a sufficient opening overhead to let heated foul air out, a sufficient opening underneath to admit cold pure air, and allowing the laws of specific gravity to do the rest. A shaft fifteen inches square over each stall will be sufficient for the first requirement. The best way to admit the fresh air is by the medium of large pipes laid underneath the floor, open at both ends outside the building and communicating with the interior of the stable by means of upright pipes set on at regular intervals, running up through and projecting an inch and a half above the level of the floor. For a stable containing say fifteen animals, the underground pipe should be three feet in diameter and should bear four upright pipes each two feet in diameter, covered with a suitable grating. The openings should occur in the floor behind the rows of stalls. This ensures a constant supply of fresh, cool air, and does away with the danger of the much dreaded draught. The projection of the upright pipes above the floor prevents them acting as drainage mediums, and the size of the underground conduit enables a person to pass through and make a periodical cleansing.

The consideration of light is also an important one. It is an ascertained fact that the bacillus of tuberculosis, when exposed for a few hours to direct sunlight, dies, and, it is also true, moderate light, while not killing it, will yet so vitiate it as to render it much less potent in causing disease.

In a stable it is hardly possible to have too much of it, and while it should not be allowed to strike directly in the

creatures' eyes, it should be so arranged as to completely flood each stall. The floor ought to be water-tight and provided with gutters. The whole interior of the stable should be constructed of materials easily cleansed and washed. An ideal stable ought not to have any overhead storage.

In addition to all these we must not forget the necessity for general cleanliness and periodical special cleansings. A special cleansing ought to begin at the tops of the ventilators and be continued down through every part of the interior of the building, including the drains and underground ventilators.

In such a paper as this it is impossible to enter into details, but it has been my object to indicate those scientific lines along which alone a successful war with tuberculosis can be waged.

BOVINE TUBERCULOSIS.

TREATING ON THE DANGER FROM COW'S MILK, AND THE
LEGISLATIVE CONTROL OF BOVINE TUBERCULOSIS.

By JOHN M. PARKER, D.V.S., Haverhill, Mass.

[Continued from page 275.]

It is strange that the sanitary condition of dairy barns should be ignored and neglected as it has. On this subject I make the following quotation from a paper I had the honor of reading before the Massachusetts Veterinary Association in May, 1894:

“As showing that sanitary conditions are not observed as they should be on dairy farms, I have attempted to tabulate the conditions as found on twelve farms in this vicinity. These are not picked out, but are taken at random from farms visited from day to day. The table shows roughly the amount of cubic space per cow; the ventilation, light, water supply; whether there is a cellar, with its condition, and how the manure is disposed of.

No.	No. of Cattle.	Cubic Space for Animal.	Ventilation.	Light.	Water.	Cellar.	Manure. How Disposed of.
1	7	465	none	poor	city	yes	cellar
2	10	286	"	"	spring	no	outside barn
3	1	440	"	none	city	"	"
4	6	224	"	poor	spring	"	"
5	4	143	"	"	"	"	"
6	7	800	stairway	fair	"	yes	cellar
7	7	416	none	good	well	"	"
8	12	487	"	"	"	"	"
9	19	1165	good	fair	"	"	"
10	3	266	poor	poor	"	"	"
11	3	1336	none	good	puddle	"	"
12	12	233	"	"	spring	"	"

" You will notice, as a rule, the cattle are far too crowded. In the city of Boston each animal must have 1,000 cubic feet of space, and probably with good ventilation that may be sufficient; at any rate it is an immense improvement on many farms in other parts of the State; but even 1,000 cubic feet are altogether inadequate if there is no ventilation. What must be the condition of the barns then, when, as in No. 5, there is only $143\frac{1}{4}$ cubic feet for each animal, with no ventilation. In only three farms out of the twelve, you will notice, is there any attempt at ventilation, and even in these it is more in name than fact. And in not a single barn that I have been in is there any provision made for the admission of fresh air.

" Of the twelve barns visited four had good light, two had only fair light, five had very poor light, and one had no light at all.

" As a rule New England farms have good water, but on some farms the wells are situated too near the yard and receive the surface drainage, and in some instances the cattle are even watered in creeks and puddles formed by the surface water.

" Keeping the manure in the cellar is another common practice. In eight of these twelve barns, the manure is kept in this way. At the farm referred to as No. 8, there are twelve cows, each cow with 487 cubic feet of space. This barn is well lighted, the windows facing the south, but there is no ventilation whatever, except when the door is open.

This farmer makes a special boast that his cattle are not out of the barn from fall till spring. They are watered in the barn, and the manure is dropped into the cellar below, where it is allowed to remain till removed in the spring. In making a visit to this barn during the winter, a man who was with me had to leave the barn because of the foulness of the air.

"At another farm, Nos. 2 and 4, there are two barns. In one containing ten cattle, each animal has 286 cubic feet with no ventilation and only one small window for light. The other barn has six cattle, each animal having 224 cubic feet. This one also is without ventilation or sufficient light. In these barns the air was very bad.

"At No. 5 there is no ventilation and only one small window for light; in this barn each animal had only $143\frac{1}{4}$ cubic feet. Two out of four animals were evidently tuberculous.

"At No. 10 three cows are kept in a tightly boarded pen, 10x10x8, giving about 266 cubic feet to each animal. At this barn there is a small ventilation and one small window, but in winter when everything is tightly closed the atmosphere is fearful.

"The other day I visited a barn, No. 11 and in conversation with the owner, I asked him where he watered his stock. 'In a puddle outside,' he answered. The puddle was a marshy place where the water lodged in wet weather. It was situated about twenty yards from the barn and formed part of the yard. The manure pile was on sloping ground at the side and drained into the puddle.

"At No. 12 there are twelve cows, each having 233 cubic feet, with no ventilation whatever, the farmer taking special pains to have a heavy canvas curtain in front of the cows. This is a fearful hole in winter time, and it has the reputation of being the hottest barn in the district. This farmer is said to lose three or four cows every year.

"No. 3 is a small shanty in the city with neither window nor ventilation. The water is carried to the cow, and she is in the barn winter and summer. Inside the barn is terribly filthy.

"At another farm (the State Experimental Station of a

neighboring State) the barn is so hot and close in winter that a friend of mine who was visiting there had to leave and go into the open air because the hot, foul air in the barn made him sick and inclined to vomit.

"These, gentlemen, are common examples of the average New England farm. Farmers have been taught to do those very things that are injurious to their stock. They have been taught to keep the manure in the cellar. What is the result? You have a damp, chilly atmosphere full of foul odors and organic impurities. They have been taught to keep the barn close and warm, and the only heat it gets is from the animal body. The hotter, they think, the better it is.

"In the great majority of dairy farms there is not even a pretence of ventilation, while the cattle are packed in as close as they can conveniently be put." (Sanitary Condition of Dairy Farms, Mass. Vety. Asso., May, 1894.)

That this condition is not confined to any one district, but is general throughout the State, is shown by Prof. Stockbridge, who, in referring to this condition, said: "In regard to some of the points that have been taken up I feel very much at home. Here is the table of Dr. Parker's. I feel as if I were myself in some one of the many, many barns in Worcester and Middlesex, and, I might almost say, in every county of the State. I have witnessed exactly what he has described and pictured before us. There is one point, however, which I have always preached upon when I have been in those barns which have such close quarters, closed cellars underneath, and where cows are put in in October and do not go outdoors again until the following May. In those cases there is another thing taking place which is injuring the animals, and that is high feeding, to see how much milk they can be forced to produce beyond the capacity of the animal to bear it."

On the same subject Dr. Bailey, veterinarian for the State of Maine, said: "We have a great many such cattle surroundings in Maine as Dr. Parker has so faithfully described in your State, and while I did not suppose you had so many around the 'hub of the universe' as we possess in Maine, I

have seen some shocking examples of unthrifty dairy stock caused by unsanitary conditions. I discovered a whole herd of cows, not long since, where the animals stood two or three feet higher behind than in front, through the accumulations of their own dung throughout the entire winter of '93-94; and when I asked the farmer what advantage he thought he gained from such a state of affairs, he told me that he could milk them easier when they were propped up behind."

Further, with regard to the importance of the matter, Prof. Ernst remarked: "This table of Dr. Parker's, it seems to me, is a very striking one, and a serious arraignment of somebody. I do not know that the care of the cattle from which a milk supply is obtained is under any one head, but if it is not, such a condition of things as this certainly appears to me to need attention. In regard to the hygienic surroundings of cattle and the specific action of sunlight upon bacilli, there is no question, of course, that these are very active factors in the destruction of the vitality of the organism. As to the exact time, I think it is hardly possible to state what that would be, but it is a well established law that sunlight is the best germicide that we have yet discovered."

While Dr. Abbott, Chairman of the State Board of Health, said: "Such tables as we see on the chart upon the wall, it seems to me, are unusually valuable, and I wish that these twelve observations could be increased to several thousands in the State. It ought to be. It would be very convincing upon this subject to have a large number of tables prepared, showing what are the actual conditions in which animals are kept for the production of milk and for slaughter. There is one column I should like to see added to that, and that is, the disposal of the dust from the stable and barn. That is one of the very important points. It has been shown by observation that dust and the disposal of dust has a great deal to do with the spread of consumption. Those industries which produce very large quantities of dust are those in which consumptives are most frequently found, and I wish that that one point might be shown, that is, as to the amount of dust and the dusty condition of the stable, how it is disposed of, whether

the animals are turned out into the open air when the stables are swept, and whether the barn floors are sprinkled in order to keep the dust from arising, because it is certainly one of the most important conditions." (Proceedings of Mass. Veterinary Association, May, 1894.)

And finally, in a pamphlet on "Tuberculosis, its relations to Agricultural Industry and Public Health," published in 1890 by the State Board of Cattle Commissioners, for the purpose of spreading information on the subject among the people, it is said: "The Commissioners find the most disease where the stables are narrow and tightly boarded up in front, so that the breath of any sick animals must be more or less mingled with that of all the others over and over again, with no sufficient inflow of fresh outside air."

The whole subject is a most important one. The way people live, their occupations and their surroundings have a most important bearing on their health.

So in cattle. Their occupation, standing all winter long in semi-darkness, tied in stanchions unable to move, while the system is being drained through excessive milking and breeding, all these things have an important bearing on the health of dairy cattle. How to remedy these faulty conditions so as to increase the health and vitality of the animal without interfering too much with the use of the cow as a milker, is a problem that must be solved before the true solution of this question can be reached. This is "the most important aspect of the serious problem of bovine tuberculosis. *If the disease can be restricted and repressed among cattle during life the hygienic problem will take care of itself.*"

THE LAW OF MASSACHUSETTS

IN RELATION TO THE SUPPRESSION OF CONTAGIOUS DISEASES
AMONG DOMESTIC ANIMALS.

By Prof. F. H. OSGOOD, Chairman of the Commission.

The laws covering this matter were passed in 1894-95. Under the law, the entire supervision and control is placed in the hands of a Board of five Cattle Commissioners, appointed by the Governor, each for a term of three years.

The Commission, as a Board, have control of the entire State, and are given power to make orders and regulations covering the importation and quarantine of cattle, the transportation and treatment of cattle within the State, the matter of quarantine of suspected cases of disease, and the disinfection and cleaning of premises; and are given generally the power to take all steps necessary or expedient to suppress or prevent the introduction of contagious diseases among domestic animals, including glanders, farcy, contagious pleuropneumonia, tuberculosis, Texas fever, foot and mouth disease, rinderpest, hog cholera and rabies, and such other diseases as the Commission may deem to be contagious.

Besides this general power vested in the Commission, each member thereof is individually given the power to enter all premises for the purpose of inspection, to condemn and destroy diseased or unwholesome meat and carcasses which they may find; to quarantine and examine all animals suspected of being affected with or having been exposed to contagious disease, and if they find them diseased to cause such animals to be destroyed and safely disposed of; and in such case no compensation is paid to the owner of the animal destroyed, unless it is destroyed as having been affected with tuberculosis. When such animals are killed, the full value at the time of condemnation, not exceeding the sum of sixty dollars, is to be paid by the State, provided the animal has been owned within the State six months continuously prior to its being killed, and also provided that the owner has not wilfully contributed to the spread of the disease. This is a change over the law of 1894, in that under that law the State paid one-half the value at the time of killing, without taking into consideration the fact that the animal was afflicted with the disease for which it was condemned.

The value of the animal is to be determined either by agreement with the Commissioners or by appraisal of two arbitrators, one to be selected by the Commission and one by the owner. These appraisers are required to be sworn. If the owner is not satisfied with the appraisal or with the action of the Commission in destroying the animal, he is given the

power to appeal to the courts to determine the existence of the disease and the value.

Besides the Cattle Commissioners appointed by the Governor, there are local Boards of Health within each city or town, selected or appointed by the voters, or city or town authorities. These Boards are given the general control of the matter of contagious diseases among the animals in their city or town, and it is made their duty to see that all outbreaks of diseases are suppressed, and that suspected cases are quarantined promptly and reported to the Commission. They are bound by law to obey all lawful orders and regulations issued by the Cattle Commission or any of its members. They are given power to make regulations within the limits of their city or town, to prevent the spread of contagious diseases among domestic animals, and to quarantine animals. Such quarantine must continue until removed by them or by the Cattle Commission or some of its members.

It is made the duty of every person within the State, who suspects or has reason to believe of the existence of a contagious disease among animals, to immediately report it to the Board of Health of their city or town. The Board of Health are immediately to cause the animal to be examined by an inspector or competent veterinarian, and if the animal be diseased to report it to the Cattle Commission.

There is a third class of persons appointed throughout the State, whose business it is especially to watch outbreaks of the disease. These are local inspectors, each city or town being required to appoint one or more such annually. The compensation of these inspectors is paid by the city or town, except that in cities or towns of less than \$2,500,000 valuation the State pays one-half of the compensation of such inspector, this being a new provision passed at the last session of the Legislature. These inspectors are required to be sworn, are made the agents of the Boards of Health, and are bound, under penalty, to obey all orders and regulations of the Commission. It is made their duty to make a regular inspection of all neat cattle, sheep and swine within the limits of their city or town. Prior to this year, such inspection related only

to neat cattle. They are also directed to inspect all other animals where they suspect that disease may exist, and also to inspect the stables and premises where domestic animals are kept. Upon their inspecting such animals, if they suspect any of them to be diseased, it is made their duty immediately to quarantine such animals by serving written notice of such quarantine order immediately to the Board of Health of the city or town. These inspectors have no power to remove quarantine imposed by them. In case of the inspection of neat cattle, sheep or swine, if they find no disease to be present, it is their duty to give the owner a certificate of such fact.

Prior to this year, the expense of all quarantine was required to be borne by the owner; but under the recent law, where specific animals are quarantined and the owner is forbidden to sell the product, the State bears the actual expenses of the quarantine after the tenth day from the imposing of such quarantine.

The proprietors of all slaughter-house establishments engaged in the business of slaughtering neat cattle, sheep or swine, are obliged to take out a license, which license permits them to slaughter upon particular days. It is made the duty of the local inspector to be present on these days, and to inspect, at the time of slaughter, all neat cattle, sheep or swine, and if he finds them to be affected with a contagious disease, to seize and destroy them, for which the owner receives no compensation. Prior to this year, no such inspection was required in the case of sheep and swine.

Owners not regularly engaged in the business are allowed to slaughter any of their neat cattle on their own premises without a license; but in such case they must have an inspector present to inspect the animal which is to be dealt with, the same as in the case of animals slaughtered at the slaughter-house. If the animal is less than six months old, or has received a certificate of health from an inspector within six months, such animal may be slaughtered by the owner on his own premises without such certificate.

Under the law as it existed prior to the act of this year, the matter of the inspection of animals was left entirely with-

in the control of the Commission. They were to determine the method to be used in making these inspections. Under this law the Commission determined that the only reliable method of detecting tuberculosis was by the injection of tuberculin. This inspection was made entirely by the board of agents specially appointed by them for that purpose, and was not put into the hands of the local inspectors. Under this regulation all animals quarantined as suspected of tuberculosis were tested with tuberculin; and, in addition to this, the Board began a systematic examination of all animals in the State, beginning by quarantining such animals by counties, testing the neat stock within the limits of each county with tuberculin, freeing those which were found to be exempt from the disease, and destroying those found affected with it. Under the law passed at the recent session of the Legislature, it was provided that "until the first day of June, 1896, the use of tuberculin as a diagnostic agent for the detection of the disease known as tuberculosis in domestic cattle shall be restricted to cattle brought into the Commonwealth from any point without its limits, and to all cattle held in quarantine at Brighton, Watertown and Somerville; provided, however, that tuberculin may be used as such diagnostic agent on any animal or animals in any other portion of the State, upon the consent in writing of the owner or person in possession thereof, and upon any animal condemned as tuberculous upon physical examination by a competent veterinarian." Under this restriction the Commission have been obliged to abandon the systematic examination of cattle. They still require all animals coming into the State to be so tested, unless they enter the State accompanied by a proper certificate that they have successfully passed such tuberculin test. All animals quarantined as tuberculous on physical examination are also subjected to the tuberculin test, and tests are made upon written application of the owner.

In brief, the only changes effected by the law of this last year are to extend the regular examination of sheep and swine, to provide for the payment of quarantine expenses in certain cases after ten days, to provide for the payment of the

full actual value of animals destroyed as tuberculous, in place of paying one-half the sound value, and to restrict the use of tuberculin.

For the purpose of carrying out this law for the entire year 1895, the Legislature appropriated the sum of \$150,000.

CONTRIBUTION TO THE STUDY OF SWINE PLAGUE, HOG CHOLERA AND PNEUMOENTERITIS OF SWINE.

BY W. SILBERSCHMIDT, M.D., Assistant to the Hygiene Institute, Zurich.*

The authors, who have studied *swine plague* and *hog cholera*, especially in America, have supplied the bibliography of the subject with such a number of publications that it is necessary, so as not to lose the path, to give a résumé of the principal papers published on the question.

I rapidly pass by those which were anterior to the bacterian era; they are due to Sutton (1850-1858), Snow (1867), Axe (1875), Law (1875), and Detmers (1877).

It is Detmers, who, toward 1876-1877, discovered, in the blood of swine dead by the disease which was then called *hog cholera*, a microbe which he considered as specific. Billings confirmed that discovery. Some years later Schutz (45)† described a microbe found and isolated during a porcine epidemic in Germany, a microbe that Loeffler had already seen before him and which is known under the name of bacillus of Loeffler-Schutz. The disease is named *Deutsche Schweineseuche*; does it differ from *swine plague* is a point upon which Billings and Klein (24) do not agree.

In 1886 Salmon (35), assisted by Theobald Smith, described a second organism and made of *swine plague* and *hog cholera* two distinct diseases. Billings (3, 4, 10) on his side tried to prove that there was but one epidemic in existence, which he called *swine plague*, and attributed to the micro-organism discovered in a case of *hog cholera* by Detmers, and confirmed by him (Billings.)

*Translated from the Annales de l'Institut Pasteur.

† See Bibliography.

In his report of 1885, Salmon closely differentiates *hog cholera* from rouget, as much by the aspect and localization of the lesions as by the differences between the two microbes. On his side, Smith (51) studies the pleomorphism of the microbe of *swine plague*, and the confusion is increased after a new publication made in 1887, where Salmon and Smith proposed to call *swine plague* the disease known until then as *hog cholera*, and call *hog cholera* that which they used to call *swine plague*. The *swine plague* of Billings seems to be identical with the *hog cholera* of Salmon.

To make things more confused, Salmon and Smith relate that in a porcine epidemic they found, upon fifteen cases they examined, the microbes of *hog cholera* and of *swine plague* mixed in six cases; the differential characters that they give to the two microbes do not seem sufficiently distinct to impose conviction.

Then again, about the same time, Cornil and Chante-messe (18, 19) describe the characters of an epidemic which they named *infectious pneumoenteritis* of the porcs of Gentilly, and study the biological and pathogenic properties with the attenuation of the microbe which they consider as the specific agent of this disease.

Rietsch and Jobert (30) found the same microbe in another epidemic at Marseilles, and Galtier (22) shows that this microbe, which was considered as specific for swine, is in certain conditions pathogenous for several other domestic animals.

At last Bang, then Selander (48) study in Sweden and in Denmark an epidemic of swine, whose specific agent is a microbe different from that of the German epidemic, but identical, according to them, to the one of the American disease.

To resume, among the diseases of swine called *swine plague* or *hog cholera*, in America, *schweineseuche* in Germany, *pneumoenteritis* in France, and *swine pest* in Sweden, which are those that must be identified—those that must be distinguished? This is a question which received the most contradictory answers when asked for, in the properties of the microbes, the nature or the localization of the lesions.

These uncertainties were alike when vaccination and immunization were had recourse to. Already, in 1885, Salmon and Smith had succeeded in immunizing pigeons with sterilized cultures—these, in fact, were the first vaccinations made with chemical substances. Billings had also proposed a mode of vaccination that Salmon considered as dangerous; and he seemed right, as Billings, later on, admitted the danger of infection for fresh swine put in contact with animals under state of vaccination; and he went further by recommending that his mode of vaccination should not be applied in localities where the disease was already in existence.

Jeffries (23), after studying two epidemics, agrees with Salmon and sees no reason to identify the two diseases.

In 1889 Salmon publishes, with the collaboration of Smith, a very complete monography (39) of *hog cholera*, where he recognizes two forms of disease—one acute, one chronic (less serious). At post mortem, the acute form is specially characterized by a tumefaction, with hæmorrhage of the various glands and by bloody extravasations of the serous membranes, such as the peritoneum and the pleura. The chronic form, which is the most common, is localized to the large intestines, where necrotic lesions with circular ulcerations, slightly prominent, are found, yellowish or blackish on the surface, with a gray or white bottom. These ulcerations are more or less spread, according to the duration of the disease, and, at times, have a diphtheroid membranous covering. They are localized to the cæcum, to the valves and superior half of the colon, and only in very severe cases do they exist as far as the inferior part of the large intestines.

The microbes of *hog cholera* are especially numerous in the spleen and the liver, then come the lungs and lymphatic glands; they are rare in the blood.

Cultures of gelatine plates give, in forty-eight hours, spherical colonies, well defined, without concentric circles, the superficial being less regular. The injection of 1-400,000 of cc. of culture may kill a rabbit. The microbe preserves its virulency a long time. Damp heat kills it in fifteen minutes at 58-59°, but it resists 80° with dry heat. It stands cold and desiccation, and may live some length of time in water.

The infection takes place through the digestive canal, and, perhaps, by the respiratory apparatus.

Experiments of vaccination by repeated inoculation of very weak doses of cultures, or by ingestion of virulent cultures, or by injection of sterilized cultures have given no positive results. Attempts to attenuate the virulency by heat have decided Salmon to give up that means of vaccination on account of the impossibility to obtain uniform cultures at the same heat. The biological properties, the mobility for instance, are not always constant.

Salmon considers the *swine fever* of English, the Swedish epidemic, and *pneumoenteritis* of Marseilles as varieties of *hog cholera*.

On the contrary, Racuglia (28, 29) differentiates *swine plague* from the disease of Loeffler-Schutz. By inoculation in the intestine or by ingestion of culture of *swine plague* he obtained a disease resembling dysentery and bringing on death, while the animals had resisted the bacillus of Loeffler-Schutz. This last gave rise to very severe local reaction, while it was scarcely visible after subcutaneous injection of *swine plague*. It seems that the culture of *swine plague* was very virulent, while that of the bacillus of *schweineseuche* was much less. The author also tries to differentiate the two microbes in the morphological point of view, and comes to the conclusion that the diseases are two, and differ by their specific microbe and the localization of the anatomical lesions.

Frosch (20) studies the bacilli of *swine plague* of Billings, of the *hog cholera* of Salmon, of the *Deutsche schweineseuche*, of the chicken cholera, septicæmia of rabbits and other diseases of the same category. For him, especially by the morphological characters, the virulency and the anatomical lesions, he considers the *hog cholera* of Salmon identical with the *swine plague* of Billings.

In 1890, Selander (49) recognizes the microbe of *swine pest* as those of the American *hog cholera* and of the *infectious pneumoenteritis* of the French.

Besides the morphological characters of the bacillus, the author has specially occupied himself with the strengthening

of its virulency and with the toxine of the *swine pest*. By successive passages by rabbits and by pigeons, he has obtained such a powerful virulency that a very weak dose (0.01-0.25 cc.) injected subcutaneously would kill rabbits in from twelve to fifteen hours. In heating the virulent blood or the culture at 57° for an hour the microbe was killed, but there remained a toxine, which, injected in the vein of the rabbit in dose of 3.5 cc., or 8 cc. under the skin would kill him. Selander admits that this toxine is the cause of death; he succeeded in immunizing rabbits against the microbe, but not against the toxine, with repeated injections of small doses of sterilized blood. The attenuation of virulency obtained by Cornil and Chantemesse in keeping cultures at 43° for thirty days, Selander fails to obtain, as the microbe of *swine pest* dies in twenty-four hours at a temperature of $41-41.8^{\circ}$.

In 1891, Smith publishes, under the direction of Salmon, a monography on *swine plague*, analogous to that published two years before on *hog cholera*. Here, again, the differentiation of the two diseases is made specially by the morphological character and the localization of the lesions. In this monography are resumed the previous publications of the two authors, of which I present again the principal points. The microbe of *swine plague* is smaller than that of *hog cholera*, is immobile, resisting less to various agents, grows less abundantly on various grounds of cultures, not at all on potatoes, produces no fermentation of glucosis, no indol; but formed phenol. In the pathogenous point of view, Smith recognizes an acute form, killing the rabbit with a weak dose in sixteen to twenty hours; a sub-acute form which kills in two to seven hours; and a chronic form characterized by infiltration and formation of pus. A point to observe, as we will consider it later on in our own experiments, vaccinated rabbits, after inoculation of virulent cultures, presented the same symptoms of fresh rabbits with the microbe of attenuated form. Among animals at the laboratory, rabbits are the most sensitive to the virus, then come mice, guinea pigs, pigeons and chickens. Pigs are generally refractory to subcutaneous inoculations, but most commonly die after an intravenous or intrathoracic injection.

For Smith, *swine plague* and the *deutsche schweineseuche* are identical; he rightfully remarks that the localization may vary with the mode of infection.

As to the relation existing between the two American diseases, Smith claims that the epidemics, where one of the microbes is found in the state of purity, are the most virulent, while when two microbes are together, neither of them is. He admits that the two diseases often exist in the chronic form, but that an external cause may suddenly be the starting point of a serious epidemic. An attenuated form of the microbe of *swine plague* exists in the saliva of swine and is transmissible without giving rise to the slightest symptom. Smith denies the return to virulency; he admits, however, that, in certain cases where a disease of another kind prevails among swine (ascarids, psorospermics, etc.), an attenuated microbe of *hog cholera* or of *swine plague* may penetrate and develop itself into a weakened organism and make one believe it a true epidemic.(!)

Such are the opinions of the *Bureau of Animal Industry*. The new publication of Salmon and Smith, and those of Billings have left the subject, so to speak, stationary. The vaccination by subcutaneous injection of old culture has given very bad results to Salmon and to Smith, while, according to Billings, the repeated intravenous injection of increased doses of virus would give rise to a greater immunity.

Let us cite also the labors of Welch (50), of Shakespeare (54) and the experimental vaccination against *hog cholera* and against *swine plague* of Schweinitz (49, 47), with chemical substances obtained from cultures. From the fact that guinea pigs immunized against *swine plague* have died with an injection of *hog cholera*, he concluded that the two diseases were different. In a later paper, he relates experiments of serum-therapy; guinea pigs immunized with an injection of albumose extracted from culture of *hog cholera*, have given a serum which granted immunity to others. In a single case, he succeeded in curing a guinea pig with repeated injections made from the second day following the injection of the virus. Other animals lasted eight or ten days longer than the wit-

nesses' animals. One must remark that these experiments were only few and that the virus had but little activity, killing animals only after seven days.

Let us, to finish, mention the contradictory conclusions of Canera (17), of Bunzl-Tedern (15), on the subject of the identity of *swine plague*, *hog cholera*, *swin pest*, the researches of Veranus Alva Moore upon the morphology of the microbes, and then look at the work of Metchnikoff upon the microbe of the French *hog cholera*, who confirmed the results obtained by Selander with the toxine of *swin pest*, and observed that in rabbits, the blood heated produces the same symptoms as the virus. In the serum of vaccinated animals the microbe grows with its normal aspect; the serum likewise has no influence upon the toxine, but it confers immunity against the microbe of *hog cholera* to fresh rabbits when it is injected into veins. Animals recovered by serum do not in their turn furnish a preventive serum. According to the researches of Metchnikoff, the preventive power of a serum is proportionate to the quantity of toxine injected. The preventive serum, acting neither upon the microbe or the toxine, must exercise its influence upon the organisms properly submitted to the treatment.

It is not necessary, I believe, to remark after the above résumé that the study of the diseases of swine known under the names of *hog cholera*, *swine plague*, *swin pest* and of *infectious pneumoenteritis*, is not yet completed. Generally speaking, the identification of the *swine plague* of Billings, of the *hog cholera* of Salmon and of the Swedo-Danish *swin pest* is granted, but the relations existing between the two forms described by Salmon have not yet been sufficiently studied.

To this day, most of the authors have stopped to a comparative study of the morphological characters of the microbes under consideration, of their virulency and of the anatomical lesions found at the post mortem. But the morphological differences existing between the microbes of *swine plague* and *hog cholera* are not thoroughly evident:

1. The dimensions vary according to the age and media of the culture.

2. The mobility of the *hog cholera* may, according to Smith himself, disappear.

3. The generally more active growth of the *hog cholera* diminishes when the microbe becomes more virulent.

4. Salmon and Smith are obliged to distinguish varieties of *hog cholera*, some more saprophyte than others.

To the point of view of the morbid symptoms, the confusion is still greater. Animals dying of *hog cholera* have often, by the deductions of the American authors, pulmonary lesions, and *swine plague* which was localized to the lungs generally occasions also troubles and lesions in the digestive canal.

The fact that the two microbes are often met in a same epidemic is, to say the least, strange. It was necessary, to solve the question, to have recourse to another process of comparison. At present, now that vaccination has entered upon the period of success, it is of high interest to know if animals vaccinated against one of the two diseases were also possessed of immunity towards the other. Von Schweinitz is the only author who, to our knowledge, has experimented in that direction; as we have seen, he differentiates the *swine plague* from *hog cholera* because guinea pigs vaccinated against the first disease did not show themselves refractory to the other. The experiments reported are not very numerous, and, besides, the contrary proof not having been made, it is admissible that the second virus was more active than the first.

On a proposition of Mr. Roux, thanks to the kindness of Mr. Metchnikoff, who gave me cultures of *hog cholera* and of *swine plague* sent by Mr. Smith at the Pasteur Institute, with a number of tubes containing the blood of rabbits dead by the microbe obtained from the epidemic of Gentilly, I undertook to compare these three specific agents.

Before relating my experiments, I desire to express my gratitude to Mr. Roux for the constant interest he has taken in my researches and for his precious advice. I also address my thanks to Mr. Metchnikoff for his numerous indications and his great amiability toward me. I shall begin by the comparative study of the microbes of *swine plague* and of *hog*

cholera, and after that I shall speak of those of the *infectious pncumoenteritis* observed in France. To avoid confusion, I will repeat that it is the question of the two American forms, *hog cholera* and *swine plague*, differentiated by Salmon.

BIOLOGICAL PROPERTIES OF THE MICROBES OF SWINE PLAGUE AND HOG CHOLERA.

I have found them about identical with those described by Smith and Salmon.

The microbe of *swine plague* is a coccobacillus, very small, immobile, coloring at both ends with the liqueous solution of Loeffler blue, in its entirety with the violet of gentian and easily taking the aniline color used in bacteriology; it discolors by the method of Gram. On plates of gelatine, the colonies appear only after a few days; they are dark, reticulated in structure in their mass, rounded and with more or less defined borders. Ensemenced in striæ upon gelosis, the microbe of *swine plague* gives, after twenty-four hours, round colonies, well defined, of various diameters, shying by transparency with a strong light, very often they are united. Culture in a meat bouillon, as well as in alkaline peptonized water, becomes cloudy usually in twenty-four hours; this is often slight and the liquid appears then opalescent. After a few days, a deposit takes place at the bottom of the ballon of culture, and little by little the bouillon returns clear; the liquid is once again limpid after about three weeks; the precipitate becomes manifest in shaking the ballon. There is no formation of invol; the reaction with the nitrite of potash, after adding a few drops of sulphuric acid, has only by exception given a very slight coloration in old cultures, never in those of a few days. Culture with glucosed bouillon and addition of carbonate of lime has not given rise to the formation of gas. Repeated sowings on potatoes have not given apparent cultures. The microbe of *swine plague* does not coagulate milk.

At first sight the microbe of *hog cholera* is easily distinguished from the preceding. It also is a coccobacillus, but with rather large dimensions. Its mobility, absent in culture on solid media, did not appear to me so evident in liquid cultures. I have failed to color its ciliæ.

Upon plates of gelatine the colonies readily appear in 24 or 48 hours. With the exception of the more rapid development they do not offer well-marked differential characters from the *swine plague*; they are generally clearer, rounded, with more regular borders. There is no liquefaction. Upon gelosis the culture is much more apparent, thicker than that of the *swine plague*; the larger colonies have a more whitish, shying, creamy aspect. The bouillon clouds move, and at times present a little foaming band (collarete), which has also been seen on the surface of the liquid in some cultures of *swine plague*. Peptonized water gives an analogous culture. There is no indol formation in young cultures. In glucosed bouillon the culture made with a little carbonate of lime has regularly given rise, after 24 or 48 hours, to a great formation of gas, and the quantity of carbonate of lime in the solution was greater than in the witness tube. The culture upon potatoes is very abundant; yellowish first, it soon appears under the form of a shying thick brown crust. As with *swine plague*, milk is not coagulated by the culture of the microbe of *hog cholera*.

In the blood the two microbes present generally the same aspect as in the culture. They have seemed to me of dimensions somewhat larger and often by couples. In cases of rapid death their number is much larger than that of the corpuscles of the blood.

For *hog cholera* the growth in striæ upon gelosis is specially abundant when successive cultures are made; if, on the contrary, one passes the animal several times without having recourse to the culture, the first sowing upon artificial media gives a culture less well filled than ordinarily and resembling that of *swine plague*. In proceeding in the same way with *swine plague*, I have failed, after several injections of virulent blood, to obtain a trace of culture with a blood very rich with microbes. The colonies became apparent when I had covered the surface of the gelosis with a little of the blood.

As to the resistance of the two microbes to various agents, I can confirm the data of the American authors.

The cultures and the virulent blood are sterile after being exposed from one hour to an hour and a half to the temperature of 58° in a water bottle. I name a length of time a little longer, because I have sometimes obtained cultures of *hog cholera* in sowing blood rich in clots, sterilized at 58° in half an hour. On this occasion I have observed that *hog cholera* resists heat more than *swine plague*.

The sterilization with thymic acid is very simple; it is sufficient to place several small crystals of thymol in a tube filled with virulent blood. The microbes are destroyed after a length of time, which varies, and here again *hog cholera* has resisted longer (three weeks to one month), while the microbe of *swine plague* was destroyed after eight to fifteen days of contact. I have also obtained the complete sterilization of the blood of *swine plague* by adding ten drops of a solution of formic aldehyd. at 2 per cent. of 10 cc. of liquid.

As for the vitality of the cultures, an ensemenced bouillon which keeps to the eture for more than three months is generally sterile. Upon gelosis the survie seems to last longer, an abundant culture of *hog cholera* more than ten months old having furnished a virulent culture with a new planting. Preserved in drawn glass tubes, closed with the lamp, away from the light, the microbes remain alive and virulent for a much longer length of time. A drop of blood of *swine plague*, kept for eleven months, has killed a mouse in twenty-four hours; the blood from her heart has given abundant culture.

From what precedes, the two microbes that I have examined can be differentiated morphologically by the following characters: the bacillus of *hog cholera* presents, as compared with that of *swine plague*, viz.: First, larger dimensions. Second, a more rapid growth upon gelatine and a more abundant culture upon gelosis. Third, the growth upon potatoes. Fourth, the formation of gas in culture of glucosed bouillon in connection with chloride of lime. Fifth, a greater resistance to physical and chemical agents. The three last characters are the most important.

PATHOGENIC PROPERTIES OF THE TWO MICROBES.

Both microbes have proved pathogenic for the rabbit, the guinea pig, the mouse and the pigeon. My experiments were principally made with rabbits.

The microbe of *swine plague* has been very virulent from the start. A subcutaneous or intravenous injection of one-tenth to one-fortieth cc. of culture killed the rabbit, sure; two pigeons died, one in eighteen, the other in thirty-six hours after receiving one-half and three-tenths cc. under the skin.

The intravenous injection of one-half cc. of culture or of blood killed the rabbit in five to ten hours; subcutaneous injections of one-twentieth cc. brought on death in twenty-four hours. In no case have rabbits survived the weakest dose.

The virulency of the microbe of *hog cholera* was less, especially in my first experiment. The intravenous or subcutaneous injection of one cc. of culture did kill the rabbit only in the space of time varying between thirty-six and ninety hours. The pigeon died in two to ten days with that same dose of one cc.; in a few cases they survived weak doses, less than half cc., but lost a great deal of flesh. The successive passages by rabbit blood did not sensibly increase the virulency. The method of Selander succeeds better. I have, in injecting the crushed spleen of animals dying of *hog cholera*, after being kept several hours within an eture in a flamed glass, killed rabbits in six hours and a half, seven hours and a half and eight hours. But, like in *swine plague*, this virulency diminished as soon as I stopped the passages with the spleen, and I had to use the same process over several times. I thus succeeded in obtaining a virulency almost always the same and as great as that of *swine plague*, especially in injecting directly into the blood; one-twentieth and one-half cc. injected under the skin would produce death in less than twenty-four hours.

The guinea pig dies in one or two days after an injection of one to three-tenths cc. of virulent blood under the skin. *Swine plague* seemed to act a little quicker than *hog cholera*.

Mice die in twenty-four hours after injection of one-twentieth cc. of blood of *swine plague*, and resists from one to three days longer that of *hog cholera*.

(*To be continued.*)

EXPERIMENTAL PATHOLOGY.

RESISTANCE OF THE RED GLOBULES OF THE BLOOD ON ANIMALS OPERATED BY THYROIDECTOMY.

By BOTTAZGI.

Thyroidectomized dogs, and, especially those which have the classic cachexia, live some fifteen days; there is in the beginning an increase of the resistance of the hematics, due probably to the destruction of the weakest elements. Later, when the dogs have convulsions, clonic and tonic spasms with shiverings, the resistance diminishes some, on account of the muscular efforts and the respiratory insufficiency, and again on account of the alteration of the organic metabolism following the operation. This diminution in the resistance is not to be compared to that due to the action of the toxic of the blood; these toxics, which are formed in the strumiprivarous cachexia, have a lesser action upon the blood. The resistance of the red corpuscles varies with the breeds of dogs. In dogs that are kept fastened, the diminution of globular resistance appears after the first week, and becomes more and more marked until the twelfth day of the fast.—*Revue des Sc. Med.*

SOME OF THE EFFECTS OF THYROIDECTOMY ON ANIMALS.

By J. L. SMITH.

In some animals, cats and dogs, the operation has for results rapid symptoms of irritation of the nervous and muscular systems, followed most commonly by death. And again, in man than monkeys, the accidents are slower in their manifestations as those of myxedema. There is a great variety of effects in the different species, and even in the same species. There is, however, a general type with a more or less marked degree. 1. For instance, a muscular shivering when the ani-

mal makes a voluntary effort, then it is spontaneous and intermittent, and then continues with spasms connected with the obtusion of the animal, and then convulsions and death. 2. In the chronic state, one does not observe the influence of the regim as observed in acute cases by Breisacher. 3. The development of the symptoms has no marked influence upon the excretion of the carbonic acid. 4. The lowering of the temperature does not bring on an elevation in the excretion of the carbonic acid as it normally happens. 5. The thermic production varies much more than in the normal animal. But it is especially the apparatus of thermic production which is altered. There are vascular modifications of the skin; the ears of the cat are at times congested, at others anæmic. These vascular changes are somewhat similar to those of the strumiprivarous cachexia. The second cause is the alteration of the skin, the dropping of the hair. The alteration of the skin and the lowering of the temperature belong also both to the cachexia, which are wanted in cats. The fact to be obliged to regulate the temperature only by means of the productive apparatus must bring a consumption. Patients suffering with myxedema always complain of cold. And again, extreme heat is as insupportable to them as cold. The role of the thyroid in the thermic regulation is but one of the aspects of its general action, and this is only indirect.—*Ibid.*

OF THE ABSORPTION OF MICRO-ORGANISMS BY FRESH WOUNDS.

By C. SCHIMMELBUSCH.

The author has made experiments to study the possibility of disinfecting a recent wound made on an animal and artificially infected. He failed, no matter what means of disinfection he used, he could not succeed in protecting a rat or a rabbit from general infection when he infected a recent wound with the pus of anthrax or the septicæmic streptococcus.

Trying to find the cause of these failures, Schimmelbusch observed that the germs entered so rapidly in the blood that, even on operating on the tail of an animal and cutting it off five minutes after the infection, yet the germs were already in the general circulation.

Then, in a new series of experiments, he succeeded in finding that, either with pathogenous germs, such as the microbe of anthrax, or with the saprophytes, such as the pyocyanic bacillus, one could, one half hour after the infection of the wound, find the germs in the principal internal organs such as the liver, heart or kidneys. The pyocyanic bacillus takes less than five minutes to reach from the wound to the internal organs.

These facts explain the uselessness of amputation after carbuncular infection in rats, and besides they agree with what is already known of the rapidity of motion of fatty embolics which require less than five minutes to reach from the medullary cavity of a bone to the heart or the lungs.—*Ibid.*

THERAPEUTIC REVIEW.

LOCAL TREATMENT OF ACTINOMYCOSIS.

In the *Wochenschrift fur Thierheilkunde*, Mr. Gruen recommends in the local treatment of actinomycotic tumors the injections of the solution of Lugol, made with iodine crystall. 1 part, iodide of potassium 5, distilled water 100. With a syringe of Lavay, 100 or 200 grammes are injected once in various parts of growth and repeated once or twice a few days later.

PHLEGMONOUS METRITIS OF COWS.

Wegered recommends the use of the solution of Lugol internally or in intra-uterine injections, especially these last, made by the veterinarian, who must only be certain that the fluid is properly introduced in the uterus, and not in the vagina.

ANTI-MILKING EFFECTS OF BELLADONNA.

Plasters or frictions of belladonna ointment made upon the mammæ of females upon which the milky secretion is too abundant or is to be stopped, have proved very beneficial. They are also recommended in cases of mammitis, especially where it is threatening suppuration.

ARECA POWDER AS A VERMIFUGE.

Take of fresh areca nut 2 to 8 grammes and 10 to 20 grammes of soluble cream of tartar, mix and give in the morning on an empty stomach, the animal having had but little milk the day before.

This is recommended by Mr. Pellipard against the *tænia*s and the *ascarides*.

CALOMEL INSTEAD OF IODOFORM.

Mr. Percacini prefers calomel in the dressing of all kinds of wounds and ulcers, as also for treatment of rebellious eczema. Its application is followed by the formation of an antiseptic scab which, when it drops off, leaves a healthy granulating surface and not uncommonly a complete cicatrization.

FOLLICULAR MANGE.

One of the most rebellious cutaneous affections which so often baffle the skill of the practitioner and wears out his therapeutic arsenal is the demodectic mange of dog. An Italian veterinarian, Mr. Galli Valerio, recommends the following ointment: Naphtol B. 10 grammes, sulphur. sublimate 50, green soap and pure grease, of each 25 grammes. A friction is applied daily over all diseased parts carefully, watching all new patches of extension. The treatment is generally long.

DEONTOLOGY.

CONSULTATIONS IN VETERINARY PRACTICE.

By E. WALLIS HOARE, F.R.C.V.S., CORK.*

It has often been a matter for surprise that so few consultations are held among veterinary surgeons. Many reasons might be adduced to account for this, among which the commercial value of the patients would occupy a prominent position. This element, which figures so conspicuously in

*From Veterinary Record for July 27.

veterinary practice, is without doubt a great drawback in many instances.

In human medicine it does not hold good, for if a case is incurable, no skill or expense is spared to prolong the life of the patient, and the practitioner gains credit for his efforts in this direction. But with us the case is very different, and unless our patient is restored to practical utility, all our efforts are not appreciated, and the owner will freely admit that it would have been better if the animal died at the outset of the disease and so saved him expense and trouble. Indeed in many instances we find that it is difficult to obtain fair remuneration in cases where the patients die after an illness, either long or short, and in a country district this fact is greatly intensified.

Under such circumstances it is clear that where one practitioner finds it difficult to obtain remuneration for his attendance and medicines, it would be impossible to expect the owner to pay for a consultant. And yet there is no calling in life, in which the adage "Two heads are better than one" could be more appropriately applied than in veterinary practice. The obscurity of symptoms, the difficulties of diagnosis, and the varieties of patients and of diseases, render the advice and assistance of the consultant of supreme importance. And in surgical cases similar remarks would apply with equal force, whether the consultant be a senior or a junior.

But it is apparent that there are other reasons for the paucity of consultations, and chief among these we must place the want of observance of the ordinary rules of professional ethics which we so frequently notice among practitioners. In many instances the consultant endeavors to demonstrate his superiority over the attending practitioner. If he be a senior and holding a high reputation, then he will make a hurried diagnosis, of course differing widely from that of the attendant, and as a result a different line of treatment is ordered. If an error has been committed in the first instance, no attempt is made to conceal it, and it is either blurted out before the owner and his groom, or, what is far worse, told to

the former privately. But frequently no error in judgment has occurred, and still the consultant must differ in opinion from the attendant in order to gain favor with the client.

It certainly is amusing in some cases to observe the extent to which this diversity of opinion is carried. If the attendant is treating a wound with dry antiseptic dressings, the consultant will order poultices. If poultices have been used in the first instance, then they are rapidly condemned, and strict antiseptic measures prescribed, not forgetting any amount of probing, etc., and a display of antiseptic solutions and different dressings to catch the eye of the client. If hot applications are being applied they are changed to cold and *vice versa*. If the attendant has enjoined strict rest for the patient, the consultant will order exercise and *vice versa*.

But it is in cases of obscure disease that the consultant has the best chance of showing his superior knowledge. Perhaps the attendant has very properly given a guarded diagnosis after a careful examination of the patient; the consultant has hardly entered the stall before he gives a blunt opinion, no doubt or difficulty exists in his mind as to the nature of the case or its proper treatment. Of course this is bound to be different from that given by the attendant, and with the result that the consultant is put down by the client as being a very clever man, "knows what is wrong with a horse as soon as he looks at him" is what we are often told.

If the patient lives the consultant gets the credit, and in all probability the client in addition. But if the patient dies and an autopsy is held, a very different state of affairs comes to light and the man who indulges in "bluff" or "lightning diagnosis" is shown up in his true colors.

Similar remarks would apply to cases of lameness. Here the consultant has great scope, because he sees the result of the attendant's treatment, and his opinion of course will vary according to the original diagnosis. If the horse goes sound ultimately, it is the consultant that cured him, and no credit is given to the power of nature or the influence of rest.

Can we wonder why veterinary surgeons dislike consultations and only have recourse to them at the express wish of

their clients? If, in our profession, the ordinary rules of medical ethics were adopted and followed, consultations would be far more frequent with manifest advantage to patients, clients and practitioners. We must confess that there is a marked absence of that *esprit de corps* which should exist among members of the same profession. How frequently we hear one veterinary surgeon holding up his brother practitioner to ridicule in public places, and taking a delight in describing the errors and ignorance of the latter. Not that it enhances the reputation of the would-be judge, critic, and sometimes slanderer, with educated people ; often it has the opposite effect. But the intention is always evident, viz., self-laudation, and jealousy, and the keener the competition, the greater the amount of this un-professional element which is introduced.

No doubt there are many who will deny the frequency of such occurrences as the above, and who imagine that professional etiquette is advancing with the other improvements in our calling. Unfortunately we are only too familiar with gross breaches of etiquette, not involuntary, but deliberate ; and when one practitioner goes out of his way to injure the reputation of another and evinces an utter disregard for truth in his statements, we are forced to the conclusion that a code of moral and professional ethics is urgently needed by veterinary surgeons. We know how careful the members of the medical profession are in this respect, and how in consultations as well as in all professional matters the rules of etiquette are strictly observed. In the veterinary profession there is ample room for reformation in this respect, and if strict etiquette were observed we would find that clients would seldom ask one practitioner to attend a case which at the same time was under the care of another, without informing the latter. But the public are often keen observers, and when they see that veterinary surgeons themselves disregard the ordinary rules of etiquette, instead of asking for a consultation, they prefer to transfer the case to another practitioner if it is not progressing in a satisfactory manner.

The remedy is in the hands of members of the profession,

if they desire to act towards one another as professional men should do. Of course competition interferes with the observance of ethics, and the survival of the fittest is the order of the day. But if the profession is to advance and hold its proper place in the scientific world, its members must observe the ordinary rules of etiquette, and encourage consultations while endeavoring to cultivate a proper *esprit de corps*. The adverse criticism of the public we cannot always avoid, but by adhering to the motto *Vis unita fortior* we can afford to treat it lightly.

REPORTS OF CASES.

EXTENSIVE FRACTURE OF THE CRANIUM, WITH A VERY SLIGHT INTERFERENCE WITH FUNCTION.

By BERNARD GUNTHER, Student of the American Veterinary College.

Like every student attending college, I was very desirous upon the close of the '94-'95 session to receive a little practical knowledge by going around with a doctor until the season of '95-'96 would open up again, to receive further tuition in this great science. In due time I was accorded the privilege of seeing the sick and disabled animals, by Dr. Roscoe R. Bell, D.V. S., of Brooklyn, with whom I have had the pleasure of studying a great many peculiar cases, but the one I am about to narrate is, perhaps, the most interesting one, and it is safe to say that it will be a long time until we meet another like it.

The subject of this sketch was a green five-year old chestnut mare, which had landed from the West two months prior to this history; had been sold by a dealer, and not being paid for, was taken back and shown to the doctor's client, with the intention of selling. He had her on trial for three days, and finding her satisfactory in driving and deportment, brought her to Dr. Bell for an opinion as to her soundness. She received a careful examination at rest and in motion, and beyond the fact that the lower lid of the right eye was tumefied and weeping, no objection was found with her. This

was regarded as simple conjunctivitis, due to cold or to slight traumatism; but, as the eyeball and its structures were apparently healthy, and as her price was reasonable, the client was advised to purchase and take the slight risk, which was regarded as trifling. When he had owned her for a week he sent for the doctor, as she was feeding poorly, and, upon observing her manner of eating, the difficulty was found to be that she could not crush the food. She would seize a mouthful of hay, for instance, roll it about in her mouth, make one or two attempts to masticate it, and then allow it to drop out of her mouth as though the attempt had caused her much pain. Her teeth were examined and found normal, but the temporal fossæ was swollen, and extreme tenderness upon pressure over the temporo-maxillary articulation. A diagnosis of synovitis of this joint was made, and anodyne treatment prescribed. The symptoms as described persisted, with slight exacerbations and improvement for about three weeks, when an urgent call was received, with the statement that the animal was found in the condition that she was then in. On entering the stable that morning we found her standing in her stall with her muzzle touching upon the floor. On backing her she rushed back to the rear wall and nearly fell. Taking her into the yard she staggered, fought the air with her front feet and appeared to have lost the power of co-ordination, reeling about and finally falling, where she lay in a half comatose condition. Pulse and temperature about normal. The owner was advised to have her destroyed and her head removed for examination. The skin was dissected from the head, and a small tumor which she showed on the right side of the parietal bone was cut into and found to be a callous, with gritty bone distributed through its substance. A space the size of a silver dollar was entirely devoid of bone, and when the callous was removed the brain was clearly visible, and it is evident that there had existed a comminuted fracture at this point, and that the bone was being absorbed by the inflammatory action. Inserting a finger into this opening a comminuted complete fracture could be easily felt, running down in the di-

rection of the zygomatic arch. Removing more of the tissue it was found that this immense fracture included the whole of the parietal bone on the right side, the temporal and articulating surface of the temporal bone, the styloid process of the occipital and the supra-orbital foramen, making a complete comminuted fracture of about eight inches in length. Before removing the inferior maxilla, the lower jaw was manipulated, which produced great displacement of the fragments and much pressure upon the substance of the brain, each lateral motion causing the brain to protrude through the large opening in the parietal by flattening of the cranial wall.

It was intended to have had the head boiled and a photograph taken of the bones, but in the process the small portions became so detached and pulpy that the effort was defeated.

There exists no doubt that this fracture occurred a considerable time previous to Dr. Bell's inspection of the horse; that the conjunctivitis was directly dependent upon it, as it grew worse as the case progressed, and that this mare, with her skull crushed, with a fracture through the temporo-maxillary articulation, and with great pressure upon the brain, performed work, deported herself properly, and contained her secret while the purchaser and his veterinarian looked on and called her healthy. It is certainly unique, and bears out the adage that in lesions of the brain none are so extensive that recovery may not take place, and none so trivial that death may not be occasioned.

TRIKRESOL AND ITS EFFECT IN THE "MANGE."*

BY HUGO ENGEL, M.D., Philadelphia, Pa.

Although many drugs have been tried as substitutes for carbolic acid—as its poisonous character and the irritation produced by it makes its general employment objectionable—yet this coal tar derivative still maintains its place as a surgical dressing. Corrosive sublimate ruins the instruments, is

*From the *Medical Summary*.

too poisonous, decomposes rapidly when in contact with vegetable matter, and as a bacillicide its value becomes almost *nihil* in the presence of solutions containing albumen.

Formalin is a powerful disinfectant, but because of its precipitating paraformalin, when evaporated or sprinkled by aid of an atomizer, its main use seems to be in the disinfection of rooms, closets, clothing, etc., and here it has no equal—apparently there being nothing in existence that can impair its powerful bactericide properties.

In seeking after a coal tar derivative that, while stronger than carbolic acid, yet would be less poisonous, Prof. Frankel, of Marburg, five years ago, drew attention to the cresols. In the so-called 100 per cent. crude carbolic acid the most efficient principles to which its anti-microbic action is due are not the phenols, but the cresols. It would seem, to the initiated, that all that is necessary would be the isolation of the latter, but they possess one great disadvantage: they are but sparingly soluble. But manufacturers at once made the laudable attempt to obtain pure and soluble cresols, but these attempts resulted only in the impure productions of such substances as creolin, lysol, etc., due to a combination of the cresols with soap, neutral oil, pyridine, naphthalene, etc.

Recently Schering, in Berlin, succeeded in producing a pure and soluble cresol. There are three cresols to which the antiseptic properties of crude carbolic acid are due: ortho-meta and para-cresol, which when isolated and pure are much easier soluble.

This new remedy, a combination of the three efficient cresols, is *trikresol*. It forms a clear, colorless liquid of a penetrating creosote-like odor, and is soluble in cold water in the proportion of 2:100; the solution remaining colorless. Besides its powerful bactericide effect it has the following invaluable properties: it does not attack metals, so that surgical instruments are not injured by it; vegetable fabrics are not discolored by it; it does not produce a slippery condition of the hands when wet with it; it is three times as powerful as carbolic acid; it is comparatively non-toxic and never creates the numb feeling in the fingers, which has been

found so objectionable in carbolic acid. A one per cent. solution of trikresol in water kills the pus-producing micrococcus aureas with certainty in half a minute, a one half per cent. solution does the same in ten to twelve minutes, while it destroys the cholera vibrio in one to two minutes.

A one per cent. solution (a full teaspoonful, though more accurate seventy-seven minims of trikresol to one pint of water) is the most useful one; for many cases a one half per cent. solution answers; a one quarter per cent. solution is employed for inhalation, and to disinfect rooms, etc., and a two per cent. solution should be used in an atomizer. I have noticed frequently that the so called "mange," a skin disease which is very common to dogs, attacked the latter whenever their kennels or whatever places they live in were damp. Though sulphur internally accelerates the cure, disinfectants locally applied always seemed to me from the very nature of the disease the proper treatment. Whoever has owned a St. Bernard dog will know that it is almost impossible to keep them from wet places, if such are near them. I have a beautiful dog of that breed of a size enormous even for such an animal. But when after a rain or from other causes the ground is damp he will leave his dry kennel and selecting the wettest place rest himself there. Though he receives his baths regularly, I had long feared that he would contract some disease from this inveterate habit of his. His hair began to fall out in places and he evidently suffered from the mange. As a test I prepared a two per cent. solution of trikresol in water and poured the same for a week all over the large yard, especially on the places the dog seemed to prefer. By the aid of an atomizer the same solution was sprinkled all around his kennel. In four days all the places on the underside of his body, where a St. Bernard dog has but very little and smooth hair, had commenced to heal, but three large spots on his back remained in the same state as before; the hair had fallen out and the skin looked like in a case of moist eczema in a human being. I now washed the places with a one per cent. solution of trikresol and had the satisfaction within twenty-four hours to observe that all

inflammation had disappeared.; the parts had lost their redness and all moisture had ceased. A few days later a fine growth of hair was beginning once more to protect the skin. The dog had not received one dose of sulphur or any internal treatment whatever.

The case proves two things: first that the mange is a local infectious disease of the skin; and secondly, that trikresol in one and two per cent. solutions is one of the most powerful disinfectants known. The itching, from which the dog suffered severely, completely ceased immediately after the local application; the weeping of the skin stopped almost as abruptly, and within a few hours the powerful effect of the drug was visible in the greatly diminished redness and the healthier appearance of the skin. I have observed no irritation whatever from the use of trikresol.

The disease is very common among dogs, and most of them suffer for weeks and months from the torturing complaint. I say torturing, because it seems to be accompanied by an intolerable itching. Newfoundland and St. Bernard dogs, English setters, in fact all dogs possessing thick hair are most affected. I have never known the disease to have been cured thus rapidly, and as the treatment is easily carried out, and its expenses are almost *nihil*, it may be well to give trikresol a more extensive trial.

EXTRACTS FROM EXCHANGES.

FRENCH REVIEW.

ACUTE ALCOHOLISM AMONG DOMESTIC ANIMALS.

By MR. R. BISSAUGE.

In one of the numbers of the *Recueil* the author records several cases of this affection, which, though rare among animals, may sometimes give rise to severe manifestations and even end fatally. These cases show that the susceptibility of animals to the effects of alcohol varies according to the species and to the nature of the liquid received.

A cow which after calving had a slight prolapsus of the vagina and of the rectum, received, after reduction of the complication, a series of drinks of strong brandy, measuring altogether about three quarts (3 litres).

From that time she acted as crazy; she was violently agitated, striking her abdomen with the hind legs, eyes staring, excess of convulsive motions of the fore arms and thighs, abundant foaming salivation, mucous membranes injected, respiration accelerated, breath with alcoholic odor, heart bouncing in the chest, etc. This was followed after several hours by a comatose condition, which ultimately ended in death, notwithstanding the treatment, which consisted of bleeding, frictions, with the internal administration of acetate of ammonia, coffee, tincture of nux vomica. With little local exceptions the post mortem failed to show any specific lesions except the very strong alcoholic odor perceived in all the tissues.

A horse having some colicky symptoms, which seem to pass off by moderate exercise, when the owner is advised to give him a mixture of absinthe and white wine. About five ounces of the absinthe mixed with a pint of wine is then administered. Some fifteen minutes after the horse is agitated, uneasy, has spasms through the large muscular masses, his gait is unsteady and he drops down as paralyzed. When down he seems sound asleep; the pulse is small and weak, the breathing labored, the eyes injected; he requires severe punishment to make him get up and when in standing position his equilibrium is very unsteady. Treatment, frictions, blanketing him warm, acetate of ammonia, coffee, citrate of caffeine. Recovery.

A young terrier pup to be kept very small receives a half a teaspoonful of cognac in a small quantity of milk. After twelve days of this treatment this little dog, from active, lively and good health becomes dull, of stupid appearance, loses his appetite, has great thirst. His walk is uncertain, eyes drawn in the orbit, eyelids swollen. The alcohol is stopped, the little fellow placed under tonic treatment, in six days has recuperated and is entirely cured in two weeks. A month

later his owner began over again the alcoholic regimen, which is in a few days followed with the same effects as before, and those are removed by merely the suppression of the alcohol and the administration of black coffee.

Another pup, four months old, in a spasm of epilepsy, received a pony of pure brandy. He died in ten minutes, showing at the post mortem no lesions to explain the sudden death, except in the stomach, which is highly congested, contained the whole glass of brandy. A few ascarids in the intestines explained the epileptiform symptoms.

In fowls, the effects of alcohol are not so rare; but they are not so frequently fatal. In one instance, however, Mr. Bissauge observed the death of seven animals—six hens and a duck—which had partaken too freely of a meal of cherries preserved in brandy which had been thrown to them because they were old and somewhat fermented.—*Rec. de Med. Vet.*

ACUTE ENCEPHALITIS TREATED WITH PILOCARPINE—
RECOVERY.

By MR. P. MASSA.

A twelve-year-old mare presented symptoms of incipient cerebral congestion for which she is treated by the administration of aloes, sinapisms under the abdomen, mustard frictions on the neck and extremities. During the night she had epileptiform attacks, the eyes are fixed and staring, the jaws contracted, pulse accelerated, temperature $38^{\circ}.8$. A seton is placed on the sides of the neck and ten centigrams of chlorhydrate of pilocarpine injected subcutaneously. During the day she had another severe attack and seems in a very bad condition. She pushes her head against the wall of her stall, her respiration is very labored, the pulse accelerated and the temperature has raised to $39^{\circ}.6$. She has another injection of pilocarpine (20 centigrams). The next day the symptoms are less marked. A third injection of ten centigrams is made. From this day the improvement continues, and with the administration of bromide of sodium soon enters upon convalescence.—*Ibid.*

ATHEROMATOUS CYST OF THE SEPTUM NASI.

By MR. SCHARENBERGER.

This case is interesting on account of the long treatment which is required to obtain a recovery. The animal in question has on the left side of the septum, at about an inch from the superior border and back of the nasal cartilages, a cyst as big as a hazel nut, spheroidal, smooth, painless and having on its center a small opening from which runs a brownish colloid matter. On pressure, the fingers receive the sensation of a kind of crepitation, which indicates that in the tumor there are hard, irregular, granular little masses, like small gravel.

The treatment lasted nearly four months. First, free incision of the cyst and dressing with solution of boric acid was carried out, but without results. The same discharge and the formation of the same little yellowish irregular crystals continuing, with increase in the dimensions of the cyst.

Then the treatment was modified by the application of a piece of cotton saturated with tincture of iodine, pressed for several minutes in the cavity of the neoplasm. No change. It was then that it was decided to modify the inflammatory process and bring it to a more acute condition. This was obtained by the removal from the cyst cavity of all cretaceous substances and the cauterization with the red iron of the entire areolar structure which lined the cyst. By this treatment a new repairing was soon established, granulations of a healthy nature sprung out, being kept under control with nitrate of silver, and the cicatrix was completed with a slight induration of the nasal membrane where the primitive cyst existed.—*Ibid.*

FOREIGN BODIES IN THE ŒSOPHAGUS OF SWINE.

By M. P. MOULIS.

After recording the general symptoms presented by swine whose œsophagus contains a foreign body that cannot be vomited by the animal, and insisting upon the intelligent desire and manner with which the animal takes a large quantity of water with wide laps so as to wash his organ, which he

fails to do, the author considers the modes of treatment which are generally put to use without result, such as the taxis and the probang, and in conclusion recommends the use of apomorphine in subcutaneous injections in the dose of five centigrammes. The injection is followed by the expulsion of the foreign substance in a few minutes.—*Ibid.*

COMMINUTIVE FRACTURE OF THE LOWER MAXILLARY.

By MR. L. COLIN.

Fractures of the bones towards the body are not uncommon, but those located in the part as seen by the author are unusual, except on special conditions such as in osteo-porosis.

The animal in question was losing flesh for some time, and presented a large, hard and very painful swelling in front of the parotid. Attempts to operate on and empty the abscess, which was considered as the cause of the trouble, proving unsuccessful, the animal was ultimately destroyed, and a fracture of the lower maxillary exposed at the post mortem. The lesion was comminutive, and extended from the coronoid process crosswise to near the last molar. There were three loose pieces necrosed and the border of the maxillary was softened and of a green color. Above the principal region there was a large purulent cyst.—*Ibid.*

ON THE USE OF MALLEINE.

By MR. FREDERIKSE.

The result of an investigation made on army horses is reported by the author, presenting conclusions of great interest to those who might be called to apply the malleine test in a large number of horses. His conclusions are as follows: 1st, injections of malleine must be recommended not only in cases of occult glanders, but also in certain cases where the classical symptoms are missing. It is the best and surest means to recognize the disease by making an early diagnosis and prevent its spreading.

In sound horses it produces *little* or *no* reaction, and it is perfectly harmless. (Some obscure points remain yet to be

elucidated in relation to the difference in the intensity of the first, second or third injection.)

2d. In cases of glanders malleine gives rise to a reaction even if the disease is but slightly advanced, reaction consisting principally in a thermic elevation of two degrees, with more or less large swellings. Generally there are also symptoms of organic reaction, though not always present. When the disease is advanced they are well marked.

3d. To decide if glanders exists or not, one must consider "(a) the duration of the elevation; that is, if it lasts more than thirty-four hours. In cases where the disease exists positively the thermic elevation lasts not only thirty-four hours, but much longer. (b) The thermic *curvature* is typical in form, viz., when the rapid rising is followed by very slow downward motion, intermixed with one or more risings."

4th. When the thermometer has risen two degrees and more, or when the temperature has returned to the normal after thirty-four hours, especially if the dropping has been regular, one must be careful before destroying the animal. Other injections are advisable.

5th. In cases of reaction it is prudent to continue the thermometric observations until the fifty-eighth hour after the injection. To judge well of the more or less typical progress of the reaction one must make his observations every hour and a half, after from six to ten hours following the injection.

6th. If the swelling, with or without lymphatic cords, exists after and more than thirty-four hours, it is, with the typical thermic curvature, another evidence of the presence of the disease.

7th. An increase in the frequency of the pulse and of the respiration, with a large local reaction only, will not be sufficient to conclude as to the presence of glanders.

8th. Horses in which the thermometer rises only one and a half degree can be considered as healthy; those from that to two degrees must be regarded as suspects and be submitted to a second or third injection.

9th. One must be cautious when animals are feverish, as then they react less to malleine even when they are affected with severe glanders. In those cases it is better to postpone the injection; if the fever still continues and the malleine is used, less importance will be attached to the variations of the temperature; but, on the contrary, the general symptoms will be so much more marked as the disease will be more advanced.

10th. Ordinarily, at the second injection, the local lesion at the point of injection is always more marked than at the first.

11th. Horses that have been turned out must be kept at least two days in a stable before being submitted to the malleine test.—*Ibid.*

TWO CASES OF TUBERCULOSIS IN SWINE.

By Mr. ED. NIEL.

In two animals, respectively seven and eight months old, lesions found at the slaughter-houses justified the author in preventing the carcasses from being used for general consumption, and though the bacteriological examination of the organs was not made, the characters were sufficiently developed to warrant his report.

In one animal the spleen was much hypertrophied, its surface irregular, bosselated, and covered with numerous tubercles containing a yellowish caseous substance. The bronchial glands are enlarged, as well as those of the stomach and mesentery. Lungs and pleura free.

In the other a well-marked generalized pulmonary tuberculosis, in which the lungs are covered with greyish nodules which contained a yellowish substance. The axillary, mediastinal and bronchial glands are hypertrophied. The liver and the spleen show a few isolated small tubercles. The inguinal and sublumbar glands are congested.—*Ibid.*

SURGICAL TREATMENT OF CHRONIC SYNOVITIS.

By Prof. J. N. RIES.

The surgical treatment of chronic synovitis, which in days gone by was considered so dangerous, has lost its severity

with the careful application of antiseptic dressing. The author reports two cases where the dropsical condition of the synovia was relieved by free incisions of the sacs, cleaning of the serous membrane with the curette and the use of carefully applied antiseptic dressing. In one case an animal very lame and deformed for several months by enormous wind-galls of the off hind leg, was entirely relieved by this form of treatment in a comparatively short time; and another suffering with a congenital synovial dropsy of the anterior extensor of the phalanges was allowed to resume work in a few days. The conclusions of the author are that tendinous synovial sacs can be opened with impunity, their cavities scraped thoroughly with the curette and complete occlusion obtained, and be perfectly compatible with a certain regularity of action, allowing the perfect use of animals, providing proper antiseptic measures are taken.—*Ibid.*

GERMAN REVIEW.

BY W. V. BIESER, D.V.S.

CLINICAL EXPERIENCES IN THE CURE OF CANCER WITH CANCER SERUM (ERYSIPELAS SERUM).

Physicians at the present day, as well as those one thousand years ago, place cancer at the head of the list of incurable diseases. Men like Billroth and Gusserou admit their inability to cope with this disease. But, thanks to the indefatigable efforts of Emmerich and Scholl, the period for the successful treatment of cancer seems to have arrived.

On the basis of observations made by Busch, Bruns, etc., it seems that intercurrent attacks of erysipelas cause a remarkably swift disappearance of the pathological deposits of cancer and sarcoma in these diseases. Fehleisen and Neisser injected in hopeless cancer cases pure cultures of cocci of erysipelas. Although they succeeded in their object these cultures are, nevertheless, too dangerous for general use, inasmuch as one case died as a result of the injection. The authors, therefore, introduced a serum containing all the

potent properties of the above, but without the cocci of erysipelas.

This serum the authors call cancer serum. The mode of preparation is as follows: A sheep that had been inoculated with cultures of erysipelas is bled; the blood is caught in sterilized vessels. After a certain time the supernatant serum is taken up in pipettes and freed from the cocci of erysipelas by filtration through Chamberlain filters. This cold, sterilized serum is filled into flasks holding 10 cc., antiseptically sealed and kept in a cool and dark place.

With this serum the authors attempted a cure in a number of more or less hopeless cases of cancer. Only in two cases, in which a secondary injection and suppuration in the cancer occurred, was the serum useless. In all other cases a noticeable improvement showed itself in a short time. The authors will not maintain that on the basis of their observations they have found a cure for cancer. Above all, the experiments are only a few months old, so that the following weighty questions—Is the serum a specific against all cancers or only against certain ones? What is the dose? How often repeated? Is not the remedy dangerous?—cannot be definitely answered.

The authors never saw any dangerous effects, even after 30 cc. had been injected, as high temperatures, etc. A long list of experiments must be made by the authors before these questions can be determined.—*Thierarzt Woch.*

BONY DEPOSITS IN THE INTESTINAL WALLS.

Bony deposits in the intestinal walls are extraordinarily infrequent. Drouin describes a case in which such deposits were present in the walls of the large colon. The autopsy held upon a horse subject to colics, the last of which resulted in congestion of the gut, complicated by rupture of the same, showed that the colon, a short distance from the seat of rupture, was covered with hardened nodules whose size varied from a pin's head to that of a finger nail. These nodules, imbedded in the mucous membrane, were easily dislodged upon the slightest pressure. The microscope showed that

these nodules consisted of compact bony tissue; the subcutaneous connective tissue in the vicinity of these nodules was thickened, the muscular layer, on the contrary, atrophied.—*Oest. Rev. Thierhllk.*

CONGENITAL CURVATURE OF THE CERVICAL SPINE IN A FOAL.

Bayer reports a remarkable case of congenital curvature. The neck extended forward from the thorax almost horizontally to the level of the fourth cervical vertebra, then an acute kink or bend to the right and downward occurred so as to bring the nostrils almost on a line with the upper rim of the wall of the right hoof. The whole cervical spine showed in general a curvature to the right, which at its dorsal end extended into the dorsal spine in such a way as to bend the latter also toward the right, and thus apparently shove the sternum considerably to the left. The left half of the thorax was not only flattened but considerably drawn in. The facial lines presented a concavity to the left, and a convexity to the right. If the foal moved very leisurely it could walk straight forward, otherwise it veered off to the left. On attempting to seize fodder from above (rack) it had to adjust its head so as to turn the throat upwards and to the right, thus giving the neck a serpentine appearance. Bayer is of the opinion that this anomaly is the result of protracted abnormal position of the foetus during uterine life, a possibility referred to by Frank in his work on obstetrics.—*Thierarzt. Woch.*

LOCAL ANÆSTHESIA PRODUCED BY THE INJECTION OF WATER.

Sleich describes a method of producing local anæsthesia by intra-cutaneous injection, water being the chief agent employed, small proportions of other ingredients being used to modify its action. Lesions following the use of water alone are prevented by the addition of small proportions of ether and glycerine. The liquid is reduced to a low temperature. He recommends the following: Boiled distilled water, 6 ounces; pure neutral glycerine, 3 ounces; ether, 90 grains.

Ten injections, of 150 grains each, of this solution may be administered without any inconvenience. The proper temperature may be obtained by the use of a carbonic acid apparatus, requiring about forty seconds to bring about the proper temperature, 14° C. Bulbs of ethyl chloride may also be employed.—*Poit. Med.*

BEHAVIOR OF URINE WITH THE POLARISCOPE.

Abnormal urines often rotate the plane of polarization, sometimes to the right, sometimes to the left. According to Hass, the following substances in the urine cause left-handed rotation: Glycuronic acid, phenyl and indoxyl-glycuronic acids, leucin, tyrosin, albumin, peptone, hemialbumose, cystin, cholestrin, aspartic acid, levulose, pseudo-butyric acid. Dextrose is the chief and almost only substance responsible for dextro-rotation.—*Apoth. Zeit.*

NUCLEIN THERAPY.

After many experiments V. concluded that nuclein is a germ-destroying substance. By repeated trials with the nuclein he finally was able to cure guinea pigs that had been inoculated with tuberculous germs. Further, the same nuclein injected into guinea pigs rendered them non-susceptible to the action of pneumo-cocci. In the human subject, it has been used with the result of curing cases in the primary stages of the disease, delaying the disease when further advanced, and of having no effect in advanced stages. The difficulties in preparing nuclein for this purpose have been many, and the results obtained by the use of the remedy are improved in proportion to the perfection of the process of manufacture. The general method of preparation is to dissolve the nuclein from the rest of the cell by a strong alkali; after acidulating, the nuclein is precipitated by alcohol; after repeatedly washing this precipitate with acid alcohol, it is dissolved in a solution of chemical salts similar to that found in the blood. In practice this solution is injected under the skin or into the muscular substance. It is believed that nu-

clein not only destroys disease germs, but also acts as a food or stimulant to those organs in the body which normally furnish nuclein to resist invading germs.—*Chem. Gaz.*

TUBERCLE BACILLI IN BUTTER.

A few years ago Heim proved that butter produced from tuberculous milk contained bacilli, and could produce infection. Bang reached the same conclusions. Roth confirmed these observations. Twenty samples of Swiss butter were experimented with, of which two contained bacilli; Brusaferro of Turin obtained similar results from an examination of Italian butter.—*Schweiz. Aertz.*

CANCER AND PORK.

Vernuel and Roux are disposed, as the result of observation and research, to regard cancer as being frequently caused by the use of pork. V. declares that he has observed in the course of his surgical career that the Israelites, who refrain from pork as an article of food, are always refractory to cancer, and this idea had presented itself afresh in connection with two special cases.—*Chem. Gaz.*

A CASE OF COMPLICATED TRAUMATIC PERICARDITIS.

A six-year-old cow showed outward symptoms of reticulitis. After three days' treatment there was a marked swelling of the tracheal glands, quickened respiration, accompanied by a constant groan; in the neighborhood of the heart decided evidence of fluid noises. Next day marked increase of both rational and physical signs.

By means of a small trocar and canula, two pints of a yellow serous fluid were drawn from the pericardium. The next day auscultation and percussion showed the same amount of fluid as before the puncture. The cow died the next night.

Post Mortem.—Considerable fluid in the pleural and pericardial sacs. The left ventricle was firmly bound by adhesions to the diaphragm. In the midst of these adhesions lay a large darning needle.—*Schweiz. Arch. Thlk.*

 TYMPANITES IN AN OX—VOMITING OF A HAIR-BALL.

R. was called to see an ox which had suddenly swollen up to an alarming extent, and seemed to be in extremis. While preparing appropriate therapeutic agents, the animal fell and made violent efforts to vomit. In the act of vomiting that subsequently occurred, a small quantity of chewed hay and a hair-ball were expressed.

The animal recovered immediately. The circumference of the hair-ball measured twenty cm.; the periphery was hard and smooth.—*Schweiz. Arch. Thlk.*

 SOCIETY MEETINGS.

UNITED STATES VETERINARY MEDICAL ASSOCIATION.

The Thirty-second Annual Meeting of this Association will convene in Des Moines, Iowa, Sept. 10th, and will be in session on that day, the 11th and 12th.

A very large attendance is confidently anticipated, which is entirely justified by the central location of this year's meeting, as well as by the splendid programme, which is as follows:

"Tuberculosis." M. R. Trumbower.

"Tuberculosis." W. B. Niles.

"Horse-shoeing." L. McLean.

"Accidents Incident to the Casting and Confining of Animals for Surgical Operation." Tait Butler.

"Roaring." S. J. J. Harger.

"Millet Disease." T. D. Hinebauch.

"The Horse as a Producer of Antitoxine." Olof Schwarzkopf.

"The Therapeutics of Colic." W. L. Williams.

Title not given. R. S. Huidekoper.

"Hypodermic Cathartics." M. H. Reynolds.

The Committee on Diseases will report as follows:

"Actinomycosis—Vegetable Parasitic Diseases." M. R. Trumbower, Chairman.

"Texas Fever." R. R. Dinwiddie.

"Cornstalk Disease." M. H. Reynolds.

"Tuberculosis." John Faust.

"Glanders." S. J. J. Harger.

ASSOCIATION OF VETERINARY FACULTIES OF
NORTH AMERICA.

The meeting of this Association will take place on the first two evenings of the meeting of the United States Veterinary Medical Association, at Des Moines, Iowa, which convenes on the 10th inst.

The programme is as follows:

1. "Results of Prescribed Entrance-Examination." Speaker, Dr. Wattles, Kansas City.

2. "State Boards of Veterinary Medical Examiners and their Relation to Veterinary Colleges." Speaker, Dr. Detmers, Columbus, Ohio.

3. "Uniform Course of Instruction in the Schools belonging to this Association." Speaker, Dr. Adams, Phila., Pa.

4. "Mutual Recognition of Students belonging to this Association." Speaker, Dr. Gill, New York.

5. "Uniform Veterinary Degree." Speaker, Dr. D. McEachran, Montreal, Can.

6. "Competitive Examination for Positions in Veterinary Faculties." Speaker, Dr. Liautard, New York.

7. "College Fees."

OLOF SCHWARZKOPF,

Chairman of Executive Committee.

VIRGINIA STATE VETERINARY MEDICAL ASSOCIATION.

The above Association met in the Veterinary Department of the Virginia Agricultural and Mechanical College, Blacksburg, Va., Tuesday, June 18, 1895, in regular session.

Dr. W. H. Harbaugh, of Richmond, Va., President of the Association, delivered his annual address, after which subjects pertaining to the status of veterinary colleges and to veterinary education generally were discussed at length.

It was learned during the discussion that a certain veter-

inary college had issued a diploma upon an attendance in college from last November to April. This man is now advertising extensively in this State and competing *as a graduate* with men who have earned their diplomas. Much indignation was expressed because an institution of pretended merit should send into this State, where none are protected by any laws, men who are in reality not sufficiently educated and whose diplomas in no way represent true qualification.

The report from the Committee on Collective Statistics was a valuable paper upon the diseases of the State. Tuberculosis, Southern cattle fever, influenza, strangles and pneumonia prevailed in about the order named; epizootic pharyngitis prevailed in Richmond and Norfolk. An outbreak of anthrax was reported from the western part of the State.

Among interesting cases reported, Dr. J. E. Miller reported rupture of the stomach in a stallion.

Dr. H. Bannister, of Roanoke, reported the post mortem lesions in a case of adenoma.

Dr. Niles, of Blacksburg, reported a case of anthrax.

Dr. Faville reported a case of pyæmia following pharyngitis.

Drs. Marshall and Dixon reported some interesting surgical cases.

Dr. Harbaugh read a very interesting paper on "Pleural Pregnancy," involving some fine points in jurisprudence.

After being most splendidly entertained by Prof. Niles and his estimable wife, the Association adjourned to meet in Richmond, Jan. 2, 1896, at which time the election of officers will take place.

GEO. C. FAVILLE, D.V.M., Secretary.

PENNSYLVANIA STATE VETERINARY MEDICAL ASSOCIATION.

The Semi-Annual meeting of the Pennsylvania State Veterinary Medical Association will be held at the Mountain House, Cresson, Pa., Tuesday, Sept. 3d, at 10 o'clock.

Papers will be furnished by Dr. James A. Waugh on "Paracentesis Abdominalis," Dr. Otto Noack on "Trichinosis," Dr. W. L. Rhoads on "Pathogenesis and Development of

Diseases," Dr. Jacob Helmer on "Physical Diagnosis," Dr. Charles Bland, subject not given.

There will also be reports of interesting cases. A good attendance is expected.

F. S. ALLEN, Secretary.

PENNSYLVANIA STATE ALUMNI ASSOCIATION OF THE A. V. C.

The first Annual Meeting of the Pennsylvania State Alumni Association of the American Veterinary College, was held at Runnymede Club, Lansdowne, Pa., June 11th.

In the absence of Dr. Allen (who was elected Chairman at the preliminary meeting, held at the office of Dr. W. H. Hoskins, February 12th), Dr. Goentner was elected Chairman *pro tem*.

After the reading and adoption of the minutes of the February meeting, the merits of a State Alumni Association were discussed, thus bringing forth its advantages for the school and profession as well as the men individually.

Then officers were nominated for the ensuing year. There being no contest, the Secretary was instructed to cast the ballot as follows: President, W. L. Zuill, Phila.; 1st Vice-President, Chas. T. Goentner, Bryn Mawr; 2d Vice-President, W. S. G. Beeber, Kutztown; Secretary-Treasurer, W. L. Rhoads, Lansdowne; Executive Committee, W. H. Hoskins, Philadelphia, F. S. Allen, Philadelphia, A. O. Cawley, Milton, H. C. McClellan, Lansdowne, I. L. Bradley, Mercersburgh.

The Executive Committee were instructed to draft by-laws, etc.

The meeting was well attended, and, after a sumptuous repast adjourned to meet at the call of the Chair.

W. L. RHOADS, Secretary.

KEYSTONE VETERINARY MEDICAL ASSOCIATION.

The last meeting of the Keystone Veterinary Medical Association for the session of '94-'95 was held at the Runnymede Club, Lansdowne, June 11th, on invitation of Dr. Rhoads, and was well attended.

In the absence of President Lintz, Dr. Bridge presided. After roll-call and reading and approval of the minutes of

the May meeting, Dr. W. S. G. Beeber, of Kutztown, was elected to membership.

Dr. John P. Hart was appointed to draft a letter to the Governor regarding appointments on State veterinary examining boards.

This being the last meeting of the current year, the regular routine of business and literary exercises were dispensed with and the evening devoted to general business questions and social enjoyment.

Those present were: W. S. G. Beeber, J. L. Bradley, F. Bridge, A. O. Cawley, C. T. Goentner, W. H. Hoskins, J. D. Houldsworth, H. J. McClellan, B. T. Sensemen and W. L. Rhoads.

After a very pleasant evening the meeting adjourned to meet at the office of W. H. Hoskins, September 17, 1895.

W. L. RHOADS, Secretary.

WISCONSIN SOCIETY OF VETERINARY GRADUATES.

We are advised by Secretary W. G. Clark, that this Society will not hold a semi-annual meeting this year, but that the regular annual meeting will be held in February, the date and place of which will be announced in the REVIEW in a later issue.

NEW HAMPSHIRE VETERINARY MEDICAL ASSOCIATION.

Secretary Dr. L. Pope, Jr., of this Association, advises us that the next meeting will be held in October.

VETERINARY MEDICAL ASSOCIATION OF NEW JERSEY.

Dr. S. Lockwood, Secretary of the above Association, informs us that hereafter there will be but two regular meetings each year, which will occur in April and October.

CORRESPONDENCE.

PROF. LAW DEFINES HIS CONNECTION WITH THE EXAMINING BOARD.

To the Editor of the American Veterinary Review:

DEAR SIR.—I beg of your courtesy, the privilege of a word on the Veterinary Examining Board of the Empire State, as

the criticism in the August REVIEW will doubtless be accepted by many as having special reference to the undersigned. I was unable to be present at the New York meeting for nomination, and cannot speak from personal knowledge, but I have been informed that the resolution introduced before the recess, was not simply to exclude teachers of veterinary schools, but teachers "in any educational institution." Surely no one on sober second thought would advocate a resolution of this kind. I do not for a moment suppose that its full meaning could have been realized by its advocates. I can suppose that it was proposed hastily and inconsiderately, and that it was abandoned when its true import was more fully realized.

The objection to teachers in veterinary schools has more to be said for it, and yet it seems to me it is not so farcical, mischievous and unjust as has been charged. Were this a *viva voce* examination, or were the papers signed by the respective candidates the objection would be valid; but when examiners and examined do not meet at all and when the examination papers are identified by numbers only, the objection loses all its force. It is true that through collusion papers could be identified by private marks, but it is to be hoped there is no teacher who would condescend to such infamous practice. If we can suppose such a thing possible for the teacher it must be allowed to be equally possible for the practitioner, and for the man who could descend so low it is not difficult to conceive of objects to be gained beside the mere advancement of a particular school. Any such practice, however, would soon work its own cure, as the high marks given by one examiner to a candidate who proved to be utterly unfit to be passed by the others, would soon lead to the discovery and correction of the fraud.

Then as to unconscious bias: Is it not as dangerous to appoint the students as the teachers of any given school? If the teacher has a desire to see his school prosper, so has the alumnus for his alma mater. If a teacher has a given method of instruction, the graduates who have been under this particular method must still bear its influence and are open to

the same objection as the teacher. To avoid these alleged dangers it is not enough that all teachers should be excluded from the examining board. To be consistent we must equally exclude all graduates of schools from which the candidates for licenses are likely to come. The present may not be an entirely unobjectionable arrangement, but surrounded as it is by existing safeguards, the objection is not so very momentous. It has been my experience for many years to be one of nearly two hundred teachers who examined their own students for degrees, and there has rarely been a complaint that substantial justice has not been done in every case.

Finally, I must notice my personal position in the matter. The criticism in the REVIEW entirely misses its mark in my case, since I am not a teacher in a veterinary school which will send candidates before the examining board. For many years "Cornell University" has declined to admit men to study with the view of receiving a veterinary degree from the institution, for the good and sufficient reason that we have not had a fully equipped veterinary school. Moreover, the new State Veterinary College, the buildings for which are now in course of erection on our university campus, will not be opened until September, 1896. No matter, therefore, how advanced may be the standard of any man who shall enter that college, he cannot possibly graduate from it until June, 1897. Students entering as freshmen in 1896 will presumably not graduate until 1900. On the grounds of disqualification as alleged by the critic, therefore, I am just as eligible to serve on the board as is any private veterinary practitioner. For the next two years I cannot possibly have a student of my own present himself for examination. For the third and fourth years from the present any candidates who may present themselves from the New York State Veterinary College at "Cornell" will be quite as much representatives of other colleges where they spent their first two years, as they will be of the institution here. But my appointment as examiner is only for one year. Next May, at the latest, the State Society is bound by the terms of the law to submit a list of ten names of persons eligible for appoint-

ment for the coming year. If thought best, my name can then give place to another, a full year before my presence on the board can be objected to on the ground advanced. If, on the contrary, the society should honor me with a second nomination, and if I should again be appointed for the year 1896-97, I shall feel that my position is as unassailable as will be that of any of my practitioner colleagues.

It is but just to say that even in the prospective future, should I live to teach in the new State Veterinary College, I shall have the happy consciousness of being absolutely removed from all connection with students' tuition fees, which constitute, after all, a main source of temptation to the teacher. This element, with whatever there may be in it unfavorable to an unbiased judgment, will be as thoroughly removed from the teacher of the college as it is now from the faculty of the university.

Pardon me for writing at this length, I have felt called upon to repudiate the undeserved impeachment, and I can not do this without reference to the facts of the case. We have in the past year accomplished much for the veterinary profession. Let us not now endanger the good secured by falling out among ourselves. The existing board of examiners may not be in every sense an ideal one, but they will do their duty to the best of their ability, and perhaps the first year's experience may reconcile them to the thought of retirement. In one year not only can the personal element be altered, but by-laws, syllabus, questions and methods of marking can be changed radically and fundamentally, according to the views of the new incumbents, and the advancement of science.

Respectfully,

JAMES LAW.

NEWS SUMMARY.

THE DEATH OF A MAN FROM GLANDERS.—On the 4th ult. there died at 1270 Putnam Ave., Brooklyn, a well-known builder named Joseph Hopkins, and the certificate of death deposited with the Bureau of Vital Statistics of

that city assigns the cause as glanders. The brief history of the case is as follows: Hopkins owned a horse which had been running down in flesh, and he was administering some alterative at the suggestion of a "horsey" neighbor. In giving a bolus his hand became slightly lacerated against the horse's teeth, but he continued to treat him. His nostrils began to discharge, but still he did not suspect the true nature of the ailment, and went about the horse as before, frequently sponging out the discharge with no precautions. Meantime the horse grew worse, and "farcy buds" showed themselves upon the hind extremities. About this time (July 10th) Hopkins was seized with a chill, and took to his bed, his physician diagnosing his case as "threatened typhoid fever," afterwards modifying it into "malaria." On the 15th the horse was destroyed by an officer of the Society for the Prevention of Cruelty to Animals, he exhibiting the cardinal symptoms of glanders and farcy. The owner of the horse gradually grew worse, and on the 31st another physician was called, who, with the history of his contact with his diseased horse, and the now rapidly developing local symptoms, at once made out a diagnosis of glanders, and the patient died on the morning of the 4th, having been unconscious for about forty-eight hours. The local symptoms are stated by the physician to have consisted of a chain of suppurating lymphatic glands along the outside of one leg, swelling of the feet, nodules upon the brow and neck, and at other points about the body, discharge from the nostrils, and physical symptoms of glanderous pneumonia. The temperature is stated to have never exceeded 103° F., though the patient received antipyretics whenever it reached that registry.

AN INTERESTING EVENT.—Dr. John W. Gadsden, of Philadelphia, President of the St. George's Society of that city, and a veterinarian of national reputation, and Mrs. Lucy M. Michener, widow of the late Prof. Charles B. Michener, who was formerly connected with the Agricultural Department and with various veterinary colleges, were married recently at the Church of the Incarnation, in presence of a large con-

gregation. The bride's wedding gown was of silver and white brocade, trimmed with elegant pearl passementerie and point lace. The ceremony was followed by a breakfast at the Riggs House, which was attended by a large number of the wedding guests. Dr. and Mrs. Gadsden left on a tour of the Thousand Isles and vicinity, and will be at home after September 15th, at 128 North Tenth Street, Philadelphia.

VETERINARY PRESCRIPTIONS IN PAPERS.—As an illustration of the ridiculous practice of veterinary surgeons conducting "Veterinary Departments" in agricultural and sporting periodicals, and the absolute worthlessness of their opinions, based on the owner's diagnosis, we print the following query, clipped from one of these publications: "Mare six years old, got lame a year ago last April while scraping dirt. She had to climb a high bank which was very stony; was lame about two weeks, but did not get entirely well. Then in October she ran away and ran through a creek, and she has been lame ever since. She cannot travel on rough roads. If she steps on a stone she flinches as if her foot were sore." To which the editor of the department, a veterinarian, replies: "Apply equal parts extract of witch-hazel and alcohol to shoulders twice a day. Be sure your collar fits her shoulder properly." And we can supplement this answer by saying: "If this guess isn't right, we will try again."

RABIES IN ENGLAND.—Rabies is said to be increasing in England. In the first five months of the year 1892 there were only eleven cases reported. During the same period of the following year there were thirty-seven cases, while in the first half of 1894 the number of cases reported was eighty; and this year it is three hundred and seventy-three.

ANIMAL PATHOLOGY is the title of "Bulletin No. 35" from the Arkansas Experiment Station, Fayetteville. In it Dr. Dinwiddie treats of verminous bronchitis, milk fever, hog cholera, tuberculosis and glanders.

NEW JERSEY ON BOVINE TUBERCULOSIS.—Dr. J. W. Stickler, Chairman of the Committee on Bovine Tubercu-

losis, stated that he and Dr. A. V. M. Baldwin, members of the committee, had again gone before the committee of the Legislature and advocated the passage of a bill providing for the inspection of herds of cattle throughout the State, and the destruction of such as might be found tuberculous. It was objected to on account of its mandatory character, and the fact that a veterinarian was to be inspector. Of course, without such provisions the law would be worthless, as the present one was proving itself to be. On motion the committee was continued.—*Medical Record*.

HOLSTEIN-FRIESIAN CATTLE.—Director James Wilson, of Iowa Agricultural College Experiment Station, is making good progress in his work with various breeds of dairy cattle. Under date of August 2d Mr. Wilson writes: "We have been doing some work at this station with regard to testing Holsteins for the Advanced Registry, and take great interest in the breed. We keep from twenty-five to thirty head of them on the farm, and find that they are not excelled in amount of butter fat by any of the other three breeds we keep here."

EXCHANGES, ETC., RECEIVED.

FOREIGN.

German.—Berliner Thierärztliche Wochenschrift. Thiermedizinische Vorträge. Oesterreichische Monatsschrift für Thierheilkunde. Schweizer Archiv für Thierheilkunde. Topographische Anatomie der Körperhöhlendes Rindes. Zeitschrift der Veterinärkunde für Rossärzte der Armee. Therapeutisches Handbuch von Engen Bass.

French.—Bulletin de Médecine et de Pharmacie de Burgraeve. Le Progrès Vétérinaire. La Presse Vétérinaire. Révue des Sciences Médicales.

English.—Veterinary Record. Veterinary Journal.

Italian.—La Clinica Veterinaria. Giornale di Medicina Veterinaria Practica.

HOME JOURNALS.

Medical Journal. Medical Record. Medical Review. Modern Medicine Medical Brief. Journal Comparative Medicine and Veterinary Archives. Therapeutic Gazette. Farm and Home. Sanitary Era. The Horseman. Agricultural Epitomist. American Agriculturist. Breeders Gazette. Our Animal Friends. Spirit of the Times. Turf, Field and Farm. Wisconsin Agriculturist. Michigan Farmer.

Independent Statesman. American Cultivator. Minnesota Horseman. Ohio Farmer. American Horse Breeder and Sportsman. National Stockman and Farmer, Etc.

PAMPHLETS, CATALOGUES AND BOOKS.

Bulletin Experiment Station, Baton Rouge, La. Report Lebanon Hospital. Report Storrs Agricultural College, Iowa. Board of Health Abstracts of Linnaean Society. Annales d'Oculistique, "English Edition." Laminectomy for Potts' Paraplegia, by Dr. S. Lloyd, Chicago Veterinary College. Toronto Veterinary College. New York Veterinary College. Massachusetts Laws. Public Papers of Gov. Flower. Medical Directory City of New York. Catalogue of the National Veterinary College, Etc., Etc.

COMMUNICATIONS.

Dr. J. M. Parker. O. Schwarzkopf. J. E. Ryder. R. A. Archibald. L. Pope. N. P. Hinkley. W. V. Bieser. G. E. Griffin. R. R. Bell. L. Pearson. S. J. J. Harger. G. Ditewig. F. S. Allen. R. B. Plageman. J. A. Couture. D. Lemay. Prof. Smith. T. King. H. Neher. W. H. Gribble. Geo. C. Faville. W. L. Williams.

PUBLISHER'S NOTICE.

We are instructed by Charles A. Runk, receiver of the late firm of Sabiston, Murray & Co., to state that in all cases where subscribers to the AMERICAN VETERINARY REVIEW have paid their subscriptions for the year 1895 and hold a receipt of the said firm, that their subscription fee will be returned to them when the affairs of that concern are wound up.

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AMERICAN VETERINARY REVIEW.

OCTOBER, 1895.

EDITORIAL.

UNITED STATES VETERINARY MEDICAL ASSOCIATION.—The Thirty-second Annual Meeting of this association convened at Des Moines, Iowa, on September 10th, 11th and 12th, and, considered from a business standpoint, was a decided success. When we look for comfort and plenty of social enjoyment we go to the East, whereas the West stimulates work and the transaction of business. The meeting just closed will have great practical and far-reaching results.

Eastern members consumed more than a week's time in attending this meeting. On September 7th a party of well-known veterinarians started from Philadelphia, arriving at Chicago the next day, where they were obliged to lay over for twelve hours. They were received by their Chicago friends and given a lunch at the residence of Dr. M. H. McKillip. In the afternoon they visited the new college, then enjoyed a drive through the parks, and in the evening were tendered a dinner at the Palmer House by the McKillip Veterinary College. In the meantime members from other Eastern States and Middle States had arrived in Chicago, and they all started, a merry party, for Des Moines. Here the Iowa State Veterinary Medical Association was in session, and several Eastern veterinarians attended their meeting, while others took in the sights of the State Fair.

The first day of the meeting was devoted to routine business. President W. Horace Hoskins opened the meeting and Secretary Richards, in behalf of the Governor, who was out of the city, delivered a brief address of welcome. Presi-

dent Hoskins then read his annual address, which was one of the strongest ever made by this zealous association worker. Then the regular programme was taken up and the reports of the committees on intelligence and education and on diseases were heard. The reading of these required so much time that adjournment was taken without discussion on them having been entered into.

The second day was booked for the reading of papers, but was almost wholly taken up by the discussion of tuberculosis. This subject has become of such great practical importance, that there seemed to be no end of inquiry, and several attempts to close the discussion were made fruitless by the enthusiasm of those who have become experts in all that pertains to this disease. The freshness and brightness with which this subject was discussed has deeply impressed the Western veterinarians, and several of them expressed to the writer their appreciation of the high degree of intelligence displayed by some Eastern speakers. The subject finally wound up in a resolution indorsing the tuberculin test and condemning the physical diagnosis only as unreliable and microscopical examination of dairy milk as deceitful and unwise in the present day.

The election of officers resulted in the re-election of President W. Horace Hoskins for a third term, an honor not bestowed before on any one President. Drs. Osgood, Meyers and Harrison were elected Vice-Presidents, Dr. Stewart, of Kansas City, Secretary, and Dr. Robertson, New York, Treasurer.

The closing session was devoted principally to the reading of papers on pertinent subjects and little or no time was left for their discussion. They were as follows: "The Horse as a Producer of Antitoxines," by Prof. Olof Schwarzkopf; "Accidents Incident to the Casting and Confining of Animals for Surgical Operations," by Dr. Tait Butler; "Roaring, and its Operative Treatment," by Dr. S. J. J. Harger; "An Improved Method of Plantar Neurotomy," by Dr. M. H. McKillip; "The Therapeutics of Colics," by Dr. W. L. Williams; "Hypodermic Cathartics," by Dr. M. H. Reynolds, and

"Anæsthetics in Horses," by Dr. J. C. Meyer, Jr., of Cincinnati, who also gave a practical demonstration of an inhaling apparatus of his own device. All of the papers were of a high order of excellence and were listened to attentively.

The meeting was followed in the evening by a banquet at Evan's Cafe, at which a good menu was provided. At first it looked as if the members were doomed to drink Iowa water, but finally the barriers of law were broken and wine and beer flowed freely, producing that feeling of cheerfulness, without which a banquet must remain a dead formality. President Hoskins officiated as toast-master. Congressman J. A. T. Hull responded in a very happy style to the toast, "The Relation of National Legislation to the Veterinary Profession," and the toasts of Dr. Stalker and Dr. Tait Butler were full of the best kind of humor.

ANNUAL MEETING OF COLLEGE FACULTIES.—The Second Annual Meeting of the Association of Veterinary Faculties of North America, was held at the Savary House, Des Moines, on the evenings of September 10th and 11th. In attendance were: Prof. Chas. P. Lyman, President of the Association; Prof. Olof Schwarzkopf, Chairman of Executive Committee; Prof. Osgood, of Harvard; Profs. Pearson and Harger, of University of Pennsylvania; Dr. Gill, of N. Y. College of Veterinary Surgeons; Dr. Salmon, of National Veterinary College; Drs. Wattles and Stewart, of the Kansas City Veterinary College, and Drs. Stalker and Niles, of the Veterinary Department, Iowa State College. As new delegates, were present: Dr. Duncan, of the Toronto Veterinary College; Dr. A. H. Baker, of the Chicago Veterinary College, and Dr. Brenton, of the Veterinary Department of Detroit, Mich. Dr. Duncan evinced a great interest in the deliberations of the association but the last-named gentlemen were not yet ready to sign the constitution.

President Lyman opened the meeting with a short address, and after disposing of some routine business, an animated discussion took place upon an open letter from Dr. Liautard, calling in question the legality of the association. A committee was appointed to draft a reply to Dr. Liautard in connection with

a committee from the U. S. V. M. A. Dr. Wattles then read a paper on the "Results of the Prescribed Entrance Examination," which was well received and cheered. Dr. Harger, in place of Dr. Detmers, discussed the subject "State Boards of Veterinary Medical Examiners in their Relation to Veterinary Colleges," a theme which stimulated a very spirited discussion, resulting in the appointment of a committee to try to devise some uniform legislation and to report at the next meeting.

The only subject discussed at the second meeting was that of a "Uniform Degree," all the other subjects on the programme being laid over until the next meeting. There remains a strong difference of opinion as to the best veterinary degree, and it was the general sentiment of the meeting that no definite degree could be agreed upon before a uniform course of instruction could be devised and adopted.

It became quite obvious at this meeting that in the future the association should have a day for herself.

THE RECENT STATE LAW.—If a law were simultaneously enacted in every State of the Union which fosters a veterinary college to compel every prospective student to take a matriculant examination, and every graduate to pass the Board of Regents, it would be fair for all hands. Where, however, one State places barriers in front of her colleges, and other States hold out inducements to receive them, the result is unfair. Young men seeking to acquire a professional knowledge will not select a seat of learning which is so hampered by State laws as to make his chances of success less than he can procure in other States. There can be no doubt but that the framing of the recent law was primarily in the interest of higher education, but the schools in this State cannot hope to attract an increased number of students from other States who expect to locate outside of New York; and the abortion that was brought on by the local irritation of that special meeting has destroyed all confidence in the good points which the law originally possessed. And all of this through the efforts of a few to bolster up a decayed institution whose graduates were a few short years ago considered

ineligible to admission in this very society on account of insufficient training.

OPENING OF THE COLLEGES.—All over the country, from New York to California, this month will witness the opening of the veterinary institutions of learning. It is not possible to suppose that there will be an increased attendance over the past five years, since the general depression in the live stock interests, induced by half a dozen factors—such as the decreased demand for horses by virtue of more or less national idleness in business centres, by the substitution of electricity for horse-power upon street cars, the passing craze of the bicycle, the threatened invasion of the horseless carriage, State laws limiting the earning capacity of horses who compete for purses—all tend to bring the price of horses to such a figure as to cause them to be, from a financial point of view, unworthy the expenditure of fees for medical attendance when they become sick or disabled. All of this tends to break the enthusiasm of men seeking this as a profession upon which to expend their money, minds and energies. This is, however, but a repetition of what has occurred many times before in general financial and commercial depressions, its influences are by no means confined to our profession, and will be followed by a renewed impulse as general prosperity returns to the country. Sanitary medicine is making immense progress, and the services of the higher educated men are being sought upon an increasing scale every year; and when general thrift returns to the country the interests which command our services will, with all other professions and businesses, participate in the common prosperity.

A FUNNY LITTLE EDITORIAL IN THE JOURNAL.—In the September issue of the *Journal of Comparative Medicine and Veterinary Archives* one of its numerous editors felt called upon to reply to certain remarks made by us in the August REVIEW relative to the action of a special meeting of the State Society in June, in placing in nomination for the positions of veterinary examiners under the Board of Regents certain teachers in veterinary colleges in this State. In the

article which has been the subject of his gracious condescension we deplored what, in our humble judgment, appeared to be a cruel injustice to the profession of veterinary medicine ; and we were, therefore, especially outspoken, since we considered that the result complained of had been obtained unfairly and by a subterfuge. The editor in question indulged in considerable nonsensical abuse of this journal ; but, while occupying two whole pages of his valuable space, fails to utter a word in refutation of the justice or accuracy of our charges. He makes the serious counter-charge, however, against us that, in our ignorance, we have committed the heinous offence of dubbing the State *Society* an *association*, but destroys the beauty of his accurate English by asserting that "there *were*, therefore, no option," etc. He replies to our charge that the afternoon session was called to order and the morning's proceedings rescinded and expunged from the minutes when certain opponents had not returned to the hall, by villifying one of those who had departed with the firm conviction that the proposition to admit teachers upon the board had been defeated for all time. He characterizes this man who had stood up for fair play as one who "interfered" with the morning session, and he further deplores the fact that he had not been gagged for being in arrears with his dues, but makes no mention of the subsequent expulsion of his co-editor from the society for owing three times as much money as that certain opponent *were* charged with withholding from the empty coffers of the State Society, and which the said opponent *have* since paid in full, and for which he holds the *Society's* receipt.

His "reply" goes on to charge the editor-in-chief of this journal with being a citizen of France, and other serious misdemeanors for which his ancestors are in part responsible.

One, and only one, of the offences which are succinctly made the object of his vituperation is worthy of our serious consideration ; the others are foolish, ridiculous, childish, and unworthy of any consideration whatever, save as a method to evade the real point at issue ; and that offence is that the staff editors of THE REVIEW have failed to attend the meet-

ings of the State Society. To this charge we plead guilty, but we are recompensed for this neglect of duty by the reflection that in that remissness we are saved the suspicion that we may have been instrumental in producing a result that should bring a blush to the cheek of those who are responsible for it.

THE NEW YORK STATE VETERINARY MEDICAL SOCIETY met in annual convention on September 5th and 6th in New York City, and there was a very full attendance of members, especially from the interior and northern portions of the State. We were gratified to see such an interest in associational matters, and believe that the members were present in the interest of veterinary science and for the educational and social pleasures which usually accompany such events. An attempt to have that portion of the minutes which referred to the special June meeting disapproved, failed utterly, and it did appear most singular that, although the large majority of those present were absent at that meeting, and heard there for the first time charges of irregularity and conniving, they never asked a question of explanation, nor offered a word in disapproval, but on the standing vote rose to their feet and recorded their approval of a very irregular set of minutes. If one had not known that the affair was impromptu, he would have been suspicious that a programme of action had been agreed upon, and that the members present were simply acting their parts. Aside from this evident unwillingness to discuss the action of those who had controlled the special June meeting, the first day's proceedings were interesting and instructive, being enlivened by two very well prepared papers, one by Dr. Crowforth on "*Acarua Demodex Folliculorum*," the other by Dr. Willyoung upon "Colics in Horses." The former paper was illustrated by plates and the microscope, while the latter elicited interesting discussion.

Not so harmonious, however, were the proceedings of the second day. The unity of action which marked the vote on that questionable minute motion could not be maintained when the election of new members was brought up; and one

nomination, more objectionable than the others, kept the members wrangling from convening time until long past noon, and at that hour no satisfactory disposition had been made of the proposal. At this time all adjourned to the operating-room to witness a difficult and neatly performed removal of the testicles from a criptorchid by Dr. Wende, of Buffalo, while Dr. Harger failed to keep his appointment to perform his famous "Arytenectomy" upon subjects that had been secured for him, though a substitute was secured for the absent surgeon. Following the operation, many of the members got together and endeavored to again force the offensive applicant upon the "association" (with apologies to the *Journal of Comparative Medicine*), but they were not as successful in this experiment as they had been at the special meeting; and the question was laid upon the table indefinitely.

Looking upon this meeting in point of numbers present, and through the spectacles of those who controlled the special meeting, it was a pronounced success; as an annual meeting of the Empire State Association, when subjects of grave sanitary and professional importance should engage the deliberation of so august an assemblage, it was—well, it showed that such a thing was not impossible, though the meeting of 1895 was not such a one.

ON ACCOUNT of the many important association meetings which took place in September, and the large number of interesting papers there offered—many of which are published in full in this issue—much valuable original matter is unavoidably crowded out of this number of THE REVIEW, notwithstanding the fact that we have added sixteen extra pages of reading matter. We ask the indulgence of our collaborators and correspondents, assuring them that their productions are gratefully received and will have an early place in our pregnant pages.

THE ANNUAL MEETING of the California State Veterinary Medical Association will be held in San Francisco, on Wednesday, December 11, and Secretary Dr. Archibald informs us that the foundation for a splendid meeting is already laid.

ORIGINAL ARTICLES.

TUBERCULOSIS IN MASSACHUSETTS.*

Mr. President and Gentlemen :

During the past year much adverse opinion and antagonism has been aroused in Massachusetts over the legislation on tuberculosis. No other matter has attracted so much attention among the members of the veterinary profession, and no subject has interested the farmers and agricultural classes to anything like the same extent.

Of course the greatest interest has centered in the work of the State Board of Cattle Commissioners.

You were informed a year ago of the nature of the bill adopted by the legislature in June, 1894. That bill gave the commissioners almost unlimited power. Up to that time animals were condemned by physical examination alone. In September of last year, the commissioners decided to use the tuberculin test in place of physical examination. In order to do this, it was felt that not only should animals, as reported by the several inspectors, be tested with tuberculin, but that systematic regulations should be adopted throughout the State providing for the quarantining of all animals until tested; for regulating the importation of all animals from without the State; for providing a market at Watertown and Brighton at which tested animals might be procured by those desiring to have them; and, lastly, for the regular and systematic examination of all neat cattle throughout the State, and the destruction of all animals that reacted to the test.

The system adopted by the commissioners for the carrying out of these ideas embraced the following points:

- 1st. The test with tuberculin of all suspected cases reported by local inspectors.
- 2d. The regulation of the importation of all neat stock into this Commonwealth from all points without its limits.
- 3d. The quarantining of all such imported animals until

*Report of State Secretary J. M. Parker, D.V.S., U.S.V.M.A., at Des Moines.

tested with tuberculin, and either tested or certified as sound.

4th. The establishment of regular quarantine stations at which all animals brought within the limits of the Commonwealth should be delivered in quarantine.

5th. The forbidding of the importation of all neat stock within the limits of this Commonwealth unless delivered at these points, except upon written permit of the Board.

6th. The branding, in a distinct way, of all animals that had successfully passed the tuberculin test.

7th. A systematic examination, by the use of tuberculin of all animals within the State, beginning with the counties of Nantucket, Dukes and Barnstable.

This policy of the Board was first made public at Worcester on October 25th, 1894, and came into force one month later, on November 25th, and this meeting at Worcester was the first intimation to either the general public or the veterinary profession that any such radical measures were proposed.

On the adoption of this policy by the Commissioners the work of the Board, as stated in their Annual Report, may be subdivided into four distinct heads, as follows:

1st. The attending to the inspection of all animals reported by the local inspectors as suspected, and the testing by tuberculin of all such as are reported to be tuberculous.

2d. The quarantining of all neat cattle which are delivered at the quarantine stations at Watertown, Brighton or Somerville, and the testing with tuberculin of such of them as are not to be immediately slaughtered at the Brighton abattoir or which are not to be immediately transported to point without this Commonwealth, which calls for a weekly service extending over three days.

3d. The systematic examination with tuberculin of all herds within the State, which includes the test by tuberculin, the destruction of all diseased animals, the disinfecting of the contaminated premises, and the branding of all animals found free from disease.

4th. The granting of permits for the transportation of animals from without the limits of this Commonwealth to various points within the State, where they are immediately

quarantined, and the testing of the same with tuberculin in the same manner as already described.

The most important of these is, I think, the first, i.e.: The work of the local inspectors and the testing with tuberculin of all animals quarantined by them.

The law which I had the honor of reporting to this association at our meeting in Philadelphia last year, provided that the mayor and aldermen of cities and the selectmen of towns shall within thirty days after the passage of this act, and hereafter annually in the month of March, appoint one or more persons to be inspectors of animals and provisions." Under this law 394 persons have been appointed; of these 94 only 58 are veterinary surgeons, 136 are farmers, 10 are cattle dealers, 20 doctors of medicine, 8 butchers; the rest are made up of grocers, painters, provision dealers, wood and coal dealers, etc.

The inspectors were expected to inspect all herds in their different localities twice yearly; all suspected cases to be quarantined and reported to the Board of Cattle Commissioners, in whose hands the final decision rested. From November of last year all suspected animals have been tested with tuberculin, and all those reacting to the test have been slaughtered. Local inspectors are also expected to be present at slaughter-houses while killing is going on, and all animals found diseased, however slight the disease, are condemned to the rendering tank.

In addition to the local inspectors, the Commission was empowered to appoint agents to assist in the work of testing suspected animals.

The second head: "The quarantining of all neat cattle which are delivered at the quarantine stations at Watertown, Brighton or Somerville, and the testing with tuberculin of such of them as are not immediately slaughtered at the Brighton abattoir, or which are not immediately transported to points without the limits of this Commonwealth, which calls for a weekly service extending over three days," was undertaken for the purpose of providing a market where farmers could secure tested animals to take the place of those slaugh-

tered and to insure that only healthy animals are brought into the State. The Board encountered many difficulties in this portion of their work. To carry out their ideas, it was necessary to quarantine the State, and prohibit the importation of cattle from other States, unless they had previously undergone the tuberculin test. Agents were appointed to take charge of this work at Brighton and Watertown markets where all animals were "subjected to the test before being offered for sale."

In applying the tuberculin test to this class of cattle innumerable difficulties were encountered. In referring to the matter the Commissioners in their Annual Report point out that "these cattle are collected from different localities and brought together for the first time. They have been put into crowded cars, have suffered the excitement attending an unusual journey, have probably received their food and water at irregular periods, and in every possible way have been subjected to conditions utterly foreign to their ordinary existence. Neat stock are not mere machines, but are excitable animals, materially affected by unusual conditions. Another significant fact in relation to the cows brought to these markets is, that they generally are or are about to be new milchers and it is within the knowledge of all who have had practical experience in this direction that this greatly increases their nervous sensibilities, and experiment shows that this actually has a direct effect on their internal temperature."

The Commissioners further say: "An examination of the tests at these markets has proved to the satisfaction of the Commission that all of these abnormal conditions have very materially complicated the temperature tables, as a result of which they have made a few mistakes in arriving at their conclusions."

An examination of the tests "covering the first six weeks of the work," will show that 6.21 per cent. of all animals offered for sale at the markets have been shown to be tuberculous.

The commissioners further report that "fewer errors occurred in the last three weeks than during the earlier exper-

ences." The fewer number of errors being due to the fact that a greater reaction was considered necessary by the Commissioners before the animals were condemned. During the earlier period a fewer number of degrees of reaction was taken as indicating tuberculosis; but from the large number of errors creeping in, the necessary reaction was increased, so that there was less likelihood of error in this direction, but at the same time there was a greater danger of passing tuberculous animals as sound. That this danger existed is shown by the report of the Inspector of the Boston Board of Health. At the Brighton abattoir, where all animals condemned by the Commissioners were slaughtered, there were in all (from November 25th, 1894, till January 1st, 1895), 104 animals condemned and killed on the tuberculin test; of this number 82 were tuberculous and 22 were non-tuberculous, showing a percentage of error of 21.1. On the other hand, 63 animals after being pronounced free from disease, the brand of the Commonwealth having been placed on the right hip, were bought by dealers and killed for beef; of these 63 animals 4, or 6.34 per cent., were found to be tuberculous; while in one week, in February, 10 animals were condemned as tuberculous, and of the 10, six were found to be free from disease.

The third head: "The systematic examination with tuberculin of all herds within the State, which includes the test by tuberculin, the destruction of all diseased animals, the disinfecting of the contaminated premises, and the branding of all animals found free from disease," is perhaps the feature of the work that has roused the greatest opposition among the farmers. To use their own words: "The Commissioners felt that the best method of protecting all parties and eradicating the disease was only to be obtained by a thorough scientific examination of all neat stock throughout the State. They, therefore, decided to begin a systematic examination of all animals in the State, county by county, taking proper precaution, as fast as all the animals in each county had been examined, destroyed or marked, to prevent, by quarantine regulations, the importation within the limits of animals which had not already been so examined.

“The Commissioners decided to begin this systematic examination in the counties of Nantucket, Duke sand Barnstable. These counties were chosen because of their natural position and because “they are comparatively small, contain but few animals, presumably as healthy as any in the State, and that the small appropriation would be practically exhausted by the time the examination of the cattle within these limits could be completed.

“At the time of the making of their report the Commissioners had completed the examination, under this order, of all animals in the island of Nantucket, and they report that the result in the island has been very satisfactory; that of six hundred and sixty-five animals examined, only six have been found diseased.”

The summary of their work for two months shows that at the Brighton examination, 89 or about 6.21 per cent. of all animals examined, were tuberculous, while at Nantucket 6 were tuberculous, or less than 1 per cent., the low percentage in these counties being due probably to their isolated position, and to the employment of simpler methods of keeping and feeding the dairy stock.

In January of the present year, the appropriation of \$100,000 having been expended, along with the \$50,000 allowed the Commissioners by the Governor, the Commissioners applied for a largely increased appropriation, with increased powers to carry on the work begun in November, 1894; and in his inaugural address the Governor outlined the work proposed to be done by the Commissioners. He said: “The vast importance of the work now undertaken under the law of 1894 by the Cattle Commission cannot be overrated. A great crisis confronts us. * * * The alarming spread of tuberculosis is confined in great measure to the last ten years. The vigorous and systematic measures now adopted are similar to those employed when pleuro-pneumonia invaded Massachusetts. * * *. In such legislation as may be enacted I know that your wisest care and best judgment will be exercised, and that no backward steps will be taken.”

And in February, at the hearings before the joint Senate

Committees on Agriculture and Public Health, the Commissioners again referred to the methods that had so successfully been employed in eradicating contagious pleuro-pneumonia, the inference being that these methods would be equally successful with tuberculosis. At these hearings the opponents of the Cattle Commissioners developed unexpected strength. There was a feeling among them that tuberculosis could not be handled in the same way as contagious pleuro-pneumonia. Contagious pleuro-pneumonia is an extremely rapid and fatal disease; it will usually develop in from three to six weeks after exposure, and often acute cases are fatal in from seven to twenty days after the animal is attacked. On an average from sixty to eighty per cent. of animals exposed will contract the disease, and about fifty per cent. of these will die.

On the other hand, bovine tuberculosis is an extremely slow and chronic disease; it is not a fatal disease, but it has a tendency to become self-limiting; it is not a highly contagious disease, for a large proportion of cases are entirely harmless, and usually long exposure and intimate association are necessary before infection takes place; and, further, it is not confined to the bovine, but is found in all domestic animals, as well as man.

When the last case of contagious pleuro-pneumonia is destroyed the danger ceases to exist; with tuberculosis it is entirely different. In fact, the conditions surrounding the two diseases are so dissimilar that it is impossible to draw any analogy between them.

Further, it is believed that the danger was not so great as to justify such extreme measures as those proposed; for, while there is a certain element of danger in the use of the meat or milk of cows that were *badly diseased*, yet these cases could, as a rule, be picked out by physical examination, and with the use of tuberculin in suspicious cases the danger would be reduced to a minimum, and would be by no means so great as to justify the use of tuberculin throughout the State, with the accompanying expense to the State and loss to the farmers which would result from the total destruction of all animals that would react to the test.

After a great deal of discussion in the legislative bodies, a compromise bill was adopted giving an appropriation of \$100,000 for the carrying on of the work, restricting the use of tuberculin to such cases as were thought to be diseased on physical examination and allowing the farmers full value at the time of slaughter, without taking into consideration the fact that the animal at the time of slaughter was afflicted with tuberculosis. This applied only to cattle that had been in the State six months.

In consequence of the smallness of the appropriation and the restrictions placed upon the use of tuberculin this bill did not meet with the approval of the supporters of the Commissioners, and strenuous efforts were made to have the Governor veto the measure; finally the bill was submitted to the Attorney-General for his opinion on the matter. This opinion is important, and is of great interest to all interested in this question. In his letter to the Governor the Attorney-General says: "Section 10, amending Sec. 45 of the Act of 1894, provides that whenever the Board of Cattle Commissioners, after an examination of contagious disease among domestic animals, become satisfied that the public good requires it, they may cause such animals to be killed without appraisal or payment, or without expense to the owner." The section further provides that "if it shall subsequently appear, upon post mortem examination or otherwise, that said animal was free from the disease for which it was condemned, a reasonable sum therefor shall be paid to the owner thereof by the Commonwealth; provided, however, that whenever any cattle afflicted with the disease of tuberculosis are killed under the provisions of this section, the full value thereof at the time of slaughter, for food or milk purposes, without taking into consideration the fact that the animal at the time of slaughter was then afflicted with such disease, shall be paid to the owner thereof out of the treasury of the Commonwealth, if such animal has been owned within the State six months continuously prior to its being killed."

The constitutional question arises, says the Attorney-General, upon the provision that when meat unfit for food by

reason of tuberculosis is seized, or cattle with the same disease are killed, the owner shall receive full value of the carcass, for food or milk purposes, "without taking into consideration the fact that the same is then infected with such disease."

It may well be assumed that a carcass that is infected or an animal that is infected with tuberculosis has practically no value for meat or milk purposes. That such was the intention of the legislature is clearly deducible from the provisions of Statutes, 1894, Chap. 491, Sec. 10, of said Statute (as amended by the bill in question), authorizing the destruction of a carcass whenever in the opinion of the inspector it is diseased or unfit for food. Section 15 of the same chapter makes it a penal offense for anyone to sell or have in his possession, with intent to sell for food, any diseased animal or any diseased carcass. Statute, 1886, Chap. 318, Sec. 2, also makes it a penal offense to sell the milk of a diseased cow. The meat or milk of a cow that has been pronounced unfit for sale by the legislature, and the sale of which is a criminal offense, cannot be regarded as having any market value.

The section under consideration, therefore, must be taken to authorize and require the payment to the owner of a diseased cow, or an infected carcass, which by the determination of the legislature is worthless, a value equivalent to the value of sound cattle or sound meat. This is not compensation, it is a gift.

If it were provided that the Board, having jurisdiction of the subject matter, might condemn all suspected meat or kill all suspected cattle, leaving it uncertain whether the disease existed, the legislature might reasonably provide that compensation for cattle so destroyed should be paid without determining the question of disease. But the statute in question is not of that character. It provides for a definite adjudication as to the existence of disease or otherwise. This fact having been determined, the bill provides that the owner shall receive "reasonable compensation" for cattle that prove to be sound, and which were killed under mistake by the officers. This is as it should be. But, on the other hand,

in respect to cattle as to which there is a final determination that they are diseased, and therefore worthless for food and milk purposes, the bill provides that this fact shall be disregarded in estimating the damage to the owner, although it is a fact which destroys their value.

The Constitution (Chap. 1, Sec. 1, Art. 4) authorizes the legislature to impose taxes "to be used and disposed of * * * for the public service." The legislature, under our Constitution, has no right to take money by taxation from one man to enrich another; and it is of no question how meritorious upon general consideration the position of the recipient may be. Money raised by taxation can only be used for public purposes."

Applying this principle to the bill in question, I am of the opinion that so far as it requires the payment of a fictitious value in all cases to the owners of cattle killed as diseased, and consequently worthless, it is an appropriation of public money for the benefit of individuals. It takes money from the common fund contributed by all citizens and confers it as a gift upon such owners of diseased cattle. If this is so, it is an unauthorized exercise of the power of taxation.

The Attorney-General then suggests: "That the legislature has the right to order such compensation as it deems reasonable to individuals for the inconvenience and annoyance of having their cattle seized and destroyed, and especially upon suspicion and when it is not certain that they are tainted." He then concludes, "upon the foregoing principles and upon such consideration as I have been able to give the matter in the brief time allotted me, I am constrained to advise your Excellency that the provisions of the bill in question, which provides that owners of cattle shall be paid full value thereof for food, and milk purposes, without taking into consideration the fact that the animal or carcass is at the time of taking infected with tuberculosis, are unconstitutional.

These, in brief, are the principal points in Attorney-General Knowlton's letter to the Governor declaring certain sections of the tuberculosis bill unconstitutional. After this

opinion had been given the Senate recalled the bill, eliminated the objectionable clauses, and passed to be engrossed a new bill, which received the Governor's signature. The bill as it was finally adopted by the legislature amends the old bill of last year, so that inspectors shall examine *sheep and swine* as well as cattle. It shall also be their duty to inspect barns and stables when directed to do so by the Commissioners.

Section 27 of the old law is amended so that when an animal is under quarantine over ten days the expense of such quarantine shall be paid by the Commonwealth. Section 45 is amended so that instead of half value owners shall have full value for animals condemned as tuberculous, the value not to exceed \$60 for each animal.

Section 13, of Chap. 496, of 1895, provides that the sum expended under the act shall not exceed \$100,000.

Section 14 provides that the use of tuberculin shall be restricted to cattle brought into the Commonwealth from without its limits, and upon any animal or animals, upon consent in writing of the owner, and upon any animal condemned as tuberculous upon physical examination by a competent veterinarian.

It will be seen that this act gives the owner full compensation. The practical working of the act being that the State buys cattle that react to the test, paying the owner full valuation for them; the cattle then come into the possession of the State when they are killed and the post mortem examination made.

It will be noticed that the principal difference from last year is that the compulsory use of tuberculin is restricted, and the farmers get full value, instead of half value, for animals destroyed on suspicion, before they are proved to be diseased by post mortem examination.

Farmers in Massachusetts, as a rule, are not opposed in principle to the inspection of their herds, they are not opposed to the adoption of measures looking to the eradicating of disease; but they are opposed to the sensational, alarming and exaggerated headlines in newspapers (see *Boston Herald*)

describing the condition of affairs as being so fearful, and leading the public to imagine that milk is the prime cause of tuberculosis in human beings. They are opposed to the compulsory use of tuberculin in their herds because they feel that the percentage of errors in the work of the Commission, so far, has not been such as to warrant the general use of tuberculin throughout the State. Again, many of the farmers have grave doubts whether the sacrifice demanded of them will result in the complete eradication of the disease from among their herds. They would not object, however, to the thorough and frequent physical examination by competent persons with the tuberculin test in suspicious cases. This, with the thorough disinfection of infected barns would, in the opinion of many, remove all serious danger, and gradually a better condition of affairs would result. The question of expense is also a grave one. The work of the Commission in the isolated counties of Nantucket, Dukes and Barnstable, where there are only 665 cattle, with their work at Brighton, Watertown and Somerville, and the examination of isolated cases reported by inspectors for about two months, absorbed more than \$100,000.

When one considers that there are 223,636 cattle in the State, and the examination of 5,394 cost over \$100,000, some vague idea of the cost is secured.

The lessons to be learned from the experience gained in Massachusetts would seem to indicate that while tuberculin is a most valuable aid to diagnosis, yet under certain conditions, especially immediately after transportation, when the animal is excited and the temperature variable, the practice of taking only one temperature before the injection of tuberculin is a bad one, and under these circumstances reliance on tuberculin is dangerous and is liable to lead to errors of a serious kind.

Second.—That in a very large proportion of cases of tuberculosis that react to tuberculin, the disease is extremely slight. In this condition the animal is not a source of danger to either human beings or other cattle.

Third.—Under favorable circumstances many such cases would entirely recover.

Fourth.—The reports and collections of statistics show that a large proportion of cases of tuberculosis in human beings occur in people who have recently moved into houses previously occupied by consumptives. This points to the direction that should be taken by sanitarians for measures looking to the prevention of tuberculosis in human beings. The same holds good in cattle. In the barns lie the greatest danger, and in pure air, sunlight, cleanliness and disinfection we have our sheet-anchors in the prevention of tuberculosis in dairy cattle.

And, in conclusion, it is the opinion of many practitioners in Massachusetts that frequent and careful physical examination with the use of tuberculin in suspicious cases, along with the thorough disinfection and renovation of infected premises, with greater attention to cleanliness and improved hygienic conditions would give better results and do more permanent good, besides being more practical and more economical than the wholesale compulsory use of tuberculin, and the total destruction of all animals that react to the test.

Respectfully presented,

JOHN M. PARKER,

Assist. State Secretary.

THE HORSE AS A PRODUCER OF ANTITOXINES.

BY OLOF SCHWARZKOPF, V.M.D.

A Paper Read before the U.S.V.M.A., at Des Moines, Iowa.

GENTLEMEN: At a time when we hear so much of the coming "horseless age," when the praise is sung of the "silent steed" and the horseless carriage parades our streets, then even the calm among us are joyous to see the horse once more in a new field of utility. Of the many usages to which the horse has been put by men for thousands of years, none has ever been loftier than its recent employment as a producer of antitoxines for some of the most dreaded of human diseases.

It will be known to you that the preparation of antitoxines is based upon the discoveries of Behring, who proved "that

the blood serum of an animal, rendered artificially immune against certain infectious diseases, if injected into another animal will protect the same against such disease or even cure him after infection." The weak point of this new theory is our lack of understanding of the nature of "immunity," inasmuch as there are several theories, notably those of Pasteur, Metschnikoff, Buchner, Behring, Roux and others. Each opposes the other, none fully explains his phenomena. We know, however, by empirical observation that certain animals, or classes of animals—are protected by nature—are "*naturally immune*" against particular diseases, which are fatal to others. We also know that a previous sickness of certain diseases of men and animals, such as scarlet fever, small-pox, yellow fever, influenza in horses, and many others, usually produce an "*acquired immunity*," at least for a variable length of time, against another attack of the same disease. Moreover, we know that we can render animals "artificially immune" against some infectious diseases by protective inoculation. Lately, we seem to have reached the point when "curative immunity" can be produced in time to counteract the infection and ward off the fatal toxic effects of certain germ diseases by the application of antitoxines. It is true that this new therapeutic applies at present only to a few diseases, diphtheria, tetanus and a few forms of septicæmia, such as puerperal fever of women, but it is no conjecture to conclude that others will be added in proportion as our knowledge of the pathogenic germ life becomes clearer and our laboratory methods improve in practicability and certainty of results.

The production of the various antitoxines is preceded by the preparation of their toxins in the bacteriological laboratory. This has been already described in our professional journals, and only for a better understanding of this paper I wish to recall to you the virulent bacilli of diphtheria and of tetanus, and the streptococcus of septic diseases are obtained from patients suffering from these diseases and cultivated on bouillon in large flasks in an incubator for several weeks, when they are filtered through a Chamberland filter, whereby the germs remain outside the filter, the filtrate being the original

fluid substrate charged with the toxine. The whole process is by no means simple, but calls for tedious work, painstaking accuracy and patience, and in spite of all of this may bring disappointments and unexpected difficulties, which must be overcome before further steps can be taken and success attained.

Having thus prepared the toxins, the animal for inoculation is selected, and it has been found that the horse is preferable to any other animal. He is most susceptible to these toxins, most tractable in the almost painless operation of remittent injections; he yields the largest amount of blood serum from one bleeding, and most of all produces a therapeutic serum of the strongest immunizing value. The horses selected at our college for this purpose are healthy, strong and large animals of good disposition, between the ages of six and eight years, and they make a favorable impression upon those timid visitors who yet entertain doubts as to the value of serum therapeutics.

What interests us most, as veterinarians, is the effect which the injections of the different toxins have upon the organism of the horse. There are certain symptoms, such as the rise of temperature, which are common to all toxins; otherwise, however, they are so widely different that it is well to give a separate description of each.

The inoculation with *diphtheria-toxine* has been lately described by Dr. Gill, of New York, and I shall, therefore, only briefly mention our own method. As the best places for injection we select the thorax and flanks, the proximity to the extremities being avoided on account of subsequent œdematous swellings. A piece of skin of the size of a dollar is shaved, washed and disinfected with a solution of bichloride of mercury. The toxin is then drawn into a sterilized syringe of the capacity of 10-50 cc. and slowly injected subcutaneously. We commence with a small injection of 2 cc. of a weak toxin, and gradually increase during several weeks to 50 cc.

The effect of diphtheria-toxine upon the system of the horse is mainly a rise in temperature of $1\frac{1}{2}$ to 3 degrees, a quickened circulation and accelerated respiration, but not in a very pro-

nounced type. From one to four hours after the injection a certain uneasiness of the horse is sometimes observed, but grave symptoms, as described by others, have not been seen by us. I think that much depends upon the surroundings of the horse, and that a suitable diet and comfortable and large box-stall prevents the horse from fully realizing the unpleasant feeling which no doubt he is undergoing. On the whole, however, the horses evidently enjoy the easy life with which they have been favored; they thrive and are easily fattened.

Very different is the effect produced by the injection of tetanus-toxine. To the skeptic there could hardly be a more convincing proof of the scientific correctness of the elimination of toxins during the progress of some germ diseases than to witness the effect of this toxine. We observed after the injection of 2 cc. within ten minutes very pronounced symptoms of ill feeling. A rise of temperature followed almost immediately, the pulse became stringy, and abdominal breathing set in. In about one hour the masseter became hardened and painful to touch, accompanied by a peculiar twitching of the muscles of the nose. In two and a half hours the temperature rose to 104° . Occasional grinding of the molar teeth was followed by outbreaks of great nervousness. At intervals the neck was thrown backward and upward and tetanic spasms of the muscles of the neck were noticed, resembling the symptoms observed in a horse that is trying to vomit. Later, light local spasms could be produced in any region by a simple touch. These symptoms lasted for about eight hours, when they gradually disappeared.

It is interesting to remark the effect of the subsequent injections of increasing quantity of toxine with a decreasing severity of symptoms. It is as if one could see the developing immunity, for the gradually increasing power of resistance of the horse against this toxine is very apparent. While our last injection was as large a dose as 25 cc., beyond a rise in temperature to 104° none of the symptoms, described as observed at the first injections, were noticed any more.

There is great likelihood, however, that all horses do not react with equal gravity at the first injection. We inoculated, experimentally, an old and hardened horse with 20 cc. of tox-

ne and anticipated very grave symptoms at first. For about ne hour, however, the old horse stood motionless, exhibiting o reaction beyond a sudden rise in temperature of two de- rees. Then he showed, gradually, uneasiness, with an occa- sional spasm of the neck and a peculiar arching of the back. Vithin two hours the temperature rose to 104° , the horse became extremely sensitive of touch, and pressure at the point f injection in the shoulder produced spasm of the muscles in hat region. After three hours, being suddenly approached y a stableman, he fell backwards and died within fifteen inutes under tetanic convulsions.

Symptoms still different are produced by the injection of treptococcus-toxine. The main effect is an elevation of tem- perature of one to two or more degrees, which extends over ne second or even the third day. The other symptoms be- come visible within three to four hours after injection and are ot very marked, but none the less severe. The horse stands rather quiet, the head bowed downward, paying no attention o its surroundings, or to noise, or to food offered him. He remains so for hours at a time and he gives the impression of eing a "pretty sick horse," as a visiting veterinarian expressed the other day. After the fifth injection of this toxine the orse showed symptoms of colic pains, looking at his flanks nd biting them occasionally.

These are our observations up to date, and, as far as I now, the effect of the tetanus-toxine and streptococcus-toxine upon the horse have not been published before. Inasmuch as hese observations were conducted on a limited number of orses, they are subject to modification, but on the whole they ill be found to be correct. The symptoms, as described, ill greatly depend upon the preparation of the toxins, the erms producing different toxidity according to the soil on hich they are cultivated. It is a matter of bacteriological perience to select a material of such chemical composition ill produce the highest toxidity, and much depends upon e skill of the bacteriologist. I think some of the toxins, if properly prepared, may be profitably used for demonstrative urposes for students, as the effect is so marked and charac- istic.

After the horses have been inoculated with these toxine for a sufficient length of time to endure large doses, and after having fully recovered from the effect of the last injection, a sample of blood is drawn, and the serum separated under aseptic precautions and injected into experimental animals which have previously been infected. If by this experiment the serum proves to contain sufficient anti-toxic properties, large quantities of blood are drawn for the preparation of anti-toxine for therapeutic purposes.

As to the application of the tetanus-antitoxine and streptococcus-antitoxine in veterinary practice, very few, if any trials have yet been made, as these new therapeutic agents are of so very recent date. We treated one horse, which was beyond hopes of recovery, with a 10 cc. dose of tetanus-antitoxine, merely to satisfy the owner, who wanted us to try anything to save the horse. Although this was all the quantity we had on hand and too small a dose, he informed us, the morning after the injection, that there was a noticeable improvement in the condition of the horse, but he died the same night. I report this negative result in order to dispel extreme expectation. As reports from human hospitals indicate, the early application of tetanus-antitoxine, if accompanied by proper surgical treatment of the wound from which the infection started, is bound to result in a cure; with the frequency and gravity of tetanus in the horse, we certainly look toward this new therapeutic agent with great hope, and it remains to be seen whether its success in veterinary practice will be equal to that obtained in human medicine.

Whatever may be the future of serum therapeutics, I should warn you against too much enthusiasm. Let us cautiously try these new remedies, if they are such, and not give a judgment off-hand, as has already been done by some. Success will alternate with failure, and the supporters and enemies will view it from their opposite standpoints. As far as veterinary science is concerned, it is certain to play an important factor in the development of serum therapeutics, and to us, as members of this science, it will add greater responsibilities and insure greater opportunities.

THE ACTION OF POISONS UPON ANIMALS.

BY L. H. FRIEDBURG, Ph.D., Professor of Chemistry and Toxicology at the American Veterinary College, &c.

With a few exceptions only, the toxic effect of a substance is greater when it is applied to wounds or hypodermically, than when it is administered per os. The exceptions are: croton oil, myronic acid (of mustard) and amygdalin. These exceptions are due to the fact that within the alimentary canal poisonous substances are split off from the three mentioned bodies, viz.: from the 1st, crotonolic acid; from 2d, ethereal mustard oil; from 3d, hydrocyanic or prussic acid, while in the hypodermic juices these splittings do not occur. Some relations of this difference in hypodermic or internal application are, for the horse :

TOXIC ACTION OF	PER OS	TO	HYPODERMICALLY
Strychnin.....	1		5
Arsenic	10.0 to 15.0 grammes.		2.0 grammes.
Iodoform	1.0 grammes.		0.5 “
	(per Kilo. of body.)		(per Kilo. of body.)

The action of the poison is always most severe in case of its injection into the trachea, the peritoneum or intravenous. Poisons do not by any means affect the different classes alike, and nothing is more erroneous than to draw conclusions in regard to the action of a poison upon man according to experiments performed upon animals. The position which the organism holds in the animal kingdom is all important. The rabbit tolerates more morphin than man, who is about fifty times heavier. The goat remains perfectly healthy after doses of lead, nicotin, cytisin, etc., which would fatally poison man. Dogs can partake of amygdalin without being injured, while it is fatal to rabbits. The hedgehog delights in doses of cantharides which would kill several people under agonizing pain; he is not killed by the bite of the most poisonous snake. The toad is almost non-sensitive to poison from digitalis, towards which the frog shows great sensitiveness. Our strongest cardiac poisons are without action upon

insects. The snail easily tolerates doses of strychnin which would kill a man instantly.

In regard to strychnin, we are in possession of very interesting facts showing that the sensitiveness of different animals towards this particular poison is quite different. On hypodermic injection, the fatal doses are, per kilogramme of the animal: rabbit, 0.6 mgrms.; dog and cat, 0.75 mgrms. fox, 1.0 mgrms.; hedgehog and frog, 2.0 mgrms.; whitefish 12.5 mgrms.; ringadder, 23.0 mgrms.; bat, 40.0 mgrms.

As a rule, newly born warm-blooded animals are but little susceptible to the influence of strychnin, so that they tolerate, relatively speaking, larger doses than adults. Horses allow, without detriment, hypodermic injections of 0.1 to 0.2 mgrms. per kilo., showing only temporary symptoms. Very old, weak horses, or such suffering from spinal marrow disease, will die after 0.3 mgrms. per kilo., hypodermic, while young horses, as a rule, tolerate this dose without danger. Every horse, however, will be killed within a short time by hypodermic injections of 0.4 mgrms. per kilo.

For one and the same species, the size of the fatal dose will vary with a number of other varying conditions. With the exception of very old age we can say that the resistance of the organism against a poison increases with the age. If a given poison has the action 1 upon a six-year-old horse, it will be for a one-year-old $=\frac{1}{2}$, for a half-year old, $\frac{1}{4}$, for a quarter-year-old $=\frac{1}{8}$, for a one-month-old $=\frac{1}{16}$, etc. There are, however, exceptions to this rule, since, e.g., young dogs will tolerate larger doses of calomel than older ones. As a general rule, one and the same dose of a poison acts less strongly upon a larger animal than upon a smaller one. If we put the horse or cattle $=1$, we have the following proportional numbers: sheep and goats, $\frac{1}{2}$; pigs, $\frac{1}{5}$; dogs (and man) $\frac{1}{10}$; cats and poultry, $\frac{1}{20}$. We practically use this knowledge in the destruction of animals, thus, e.g., in the use of prussic acid for this purpose. We can kill a 1,600 pound horse by means of one gramme of the concentrated, anhydrous prussic acid, (which the chemist has to prepare himself, it not being dispensed) while we must use 100 to 200 times this quantity if we want to

kill an elephant. We remark here, that since the final effect of prussic acid, viz., for a certain given quantity, is the same, whether it is given in the concentrated form or in any dilution whatever, the best method for the destruction of such large animals as, e.g., the elephant, is to mix the poison with an alcoholic beverage, whiskey or rum, and water and allow it to be drunk.

It is scarcely necessary to mention, that the constitution, the individual disposition (idiosyncrasy), the condition of the stomach (filled or empty), the race and sex, are to be considered when we speak of the action of a poison, and this will differ accordingly.

Finally, there is the factor of adaptation. Arsenic, which is used as a cosmetic for horses, will gradually be tolerated in enormous doses. While the average fatal dose, as we have seen above, is 10 to 15 grammes internally, or 2.0 grammes when introduced into wounds; there are cases on record, where horses remained in good health after the application of 30 grammes. We must not forget, however, that the *form* in which the poison is applied has to be taken into consideration. Arsenious oxid solutions are by far more poisonous than solid arsenious oxid (white arsenic). It is similar in regard to substances when taken in powdered form, or when taken in lumps. In addition the commercial white arsenic is of different kinds. Some specimens are more soluble than others.

Considering all the above mentioned facts we should never forget that the particular organism acted upon has to be considered if we speak of the toxic effect of a certain substance.

The most varying chemical agencies may produce poison cases. We do not mean to speak of therapeutic errors, accidentally brought about, nor of criminal poisoning.

Interesting in this regard is lead. Some rivers which pass by lead works have been the cause of cattle poisoning. The external application of red lead salves has caused disturbances, for the reason that the animals licked off the salve from each other. Pails, railings, etc., newly painted with lead paint, have caused grave toxic cases. Concerning sugar of lead (lead acetate), it is fatal in the following progression: Pig and

dog, 10.0 to 25.0 grms.; sheep and goat, 20.0 to 25.0 grms.; cattle, 50.0 to 75.0 grms.; horse, 500.0 to 750.0 grms. Even the symptoms for chronic lead poisoning are different for cattle or horse. In the former we find marked disturbances of the alimentary tract, which are entirely absent in the horse, this latter showing asphyxia.

Mercury is medicinally used in two very different types of chemical combination, besides its application as such, finely disintegrated with some fat, in the form of gray mercury ointment. Cattle are exceedingly susceptible to the influence of this latter, while horses and dogs are exceedingly tolerant to it. While 30.0 grms. of gray ointment may cause grave toxic appearances on cattle, we have cases on record, one of a dog which swallowed 170.0 grms. at once without grave disturbances following, and of a horse which died only after 3240.0 grms. (more than three kilos.) had been applied within a month. Birds, on the other hand show great susceptibility.

Of the two different types of chemical combinations, the most poisonous is the mercuric chlorid (corrosive sublimate, Hg Cl_2), used as an antisepticum in surgery, etc. Here, also, cattle show decidedly greater susceptibility than horses. The fatal dose for cattle is 4.0 to 8.0 grms.; for the horse, 8.0 to 10.0 grms. For calomel (mercurous chlorid, $\text{Hg}_2 \text{Cl}_2$), which is of much weaker toxic action, the relations are similar. While cattle suffer severely after 8.0 to 10.0 grms., horses will begin to do so after 20.0 grms.

But we have also a chemical compound for which these relations are reversed. This is tartar emetic. Horses may be called the most sensitive towards this substance; they will averagely die after 15.0 to 30.0 grms. Cattle, on the other hand, will not even show signs of a reaction after doses of 50.0 grms. had been administered.

ISOLATION OF TUBERCULOUS CATTLE BY SEPARATION.*

By JOHN FAUST, Poughkeepsie, N. Y.

The closing remarks of my paper last year on tuberculosis were, if we cannot get the aid of the Government, or

* Read at the meeting of the U. S. V. M. A., at Des Moines.

the expense would be too great, my advice was to separate the diseased from the well.

Now, gentlemen, I find an excellent experiment by separation conducted by Prof. W. Goodman, in Dorpat, reported in the monthly journal (*Praktische Thierheilkunde*, VI Band, 10 Heft). As the report appeared to me so valuable at the present time, in our efforts to stamp out tuberculosis, I will give a synopsis of this report.

I am thoroughly convinced that tuberculine is the only reliable diagnostic remedy for the separation of diseased from healthy cattle, conditioned only on the application of the proper dose and on the right measurement of temperature carefully taken before and after the injection has been given.

As early as 1891, I was permitted to use tuberculine as a diagnostic remedy in the battle against cattle tuberculosis on one of the largest herds in the government of Livland, thanks to the extreme kindness of the owner, Hon. August Von Sivers, of Manor Old Kusthof, near Dorpat. Of the results achieved at the first, as well as at later examinations, the following we will report:

The estate Old Kusthof consists of one principal farm, besides three others, separated only a few kilometers from each other. On each of these farms is situated a large, well arranged cattle barn, therefore Old Kusthof is admirably suited for the separation of animals, necessary after tuberculine injection.

The Old Kusthof herd is of high grade stock which Hon. Von Sivers has raised after thirteen years crossing of imported Jutland stock with the Livland home stock, and was considered in the best condition. In that whole region this herd was looked upon as being the healthiest, as it has been the rigid practice for years to separate any and all animals that showed any symptoms of tuberculosis.

In March and April, 1891, the first tuberculine injections were made on 486 cattle, at which time we gave for steers 0.5, old cows 0.3, younger cows 0.2 and heifers 0.1, of tuberculine. The result was as follows:

No reaction,	189 animals,	- -	(38.80 per cent.)
Uncertain,	81	" - -	(16.66 " ")
Strong reaction,	216	" - -	(44.44 " ")
Total,	486		

The animals which had shown no reaction were again examined and another injection given. The older animals being injected in October and November, 1891, and the younger ones in April, 1892. The possibility that perhaps one or the other had received too small a quantity of tuberculine was the reason for a second examination, and the dose given at the second examination was 0.1 tuberculine greater than the first. The 189 animals which showed no reaction at the first examination, gave the following result at the second:

Healthy,	143	- -	(75.66 per cent.)
Sick,	39	- -	(20.63 " ")
Uncertain,	7	- -	(3.70 " ")
Total,	189		

The 81 animals which showed only a slight reaction at the first examination, gave the following result at a second investigation:

No reaction (healthy),	42	- -	(51.85 per cent.)
Strong " (sick),	36	- -	(44.69 " ")
Uncertain,	3	- -	(3.71 " ")
Total,	81		

The result of both investigations of this herd of 486 animals gave the following: 185 animals were healthy (38.06 per cent.); and 291 sick, 10 uncertain (61.93 per cent.)

The healthy animals were placed in the stable on the principal farm, after it had been thoroughly cleaned and disinfected with corrosive sublimate and well aired during the summer, as long as the pasture of the animals lasted. The important question for the management in regard to the diseased animals was: are the animals which have been found diseased by the tuberculine test of any further value for breeding purposes? The most natural thing to do would have been to have all slaughtered; but as the number of diseased animals

was so large, the entire separation of so large a number from breeding purposes, would have caused serious trouble in the working of the farm, and great loss to the management; therefore, Hon. Von Sivers decided that those cows which were found diseased by the tuberculine test should be placed on two of the smaller farms, but their calves brought to the principal farm, and here fed, with the offspring of the healthy animals, on the unboiled milk of the cows which were found healthy by the tuberculine test. After the weaning of the calves from the use of milk, to make room for the other young calves, they were taken from the principal farm and placed on the third smaller farm which had been reserved for the young stock. They were here placed in a new barn and here kept until the separation after the tuberculine test.

The use of milk from healthy cows which had shown no reaction in the tuberculine test, in the raising of calves, was done to avoid the danger of infection by milk, and, in fact, did give good results, as will be shown by comparing the tables of three succeeding years. The calves of these three years were, in the majority of cases, offspring of sick cows.

I.—The sixty-seven calves of the year 1891 did not receive milk from cows pronounced healthy by the tuberculine test. The injection, given in November, 1891 (dose .005-.01), resulted as follows:

Healthy,	39	-	-	(58.20 per cent.)
Sick,	26	-	-	(38.80 " ")
Uncertain,	2	-	.	(2.86 " ")

Total, 67

II.—The calves of 1891 and 1892 were fed on the milk of healthy animals. The 109 animals which were injected in June, 1892 (dose 0.1 tuberculine), gave the following result:

Healthy,	89	-	-	(81.15 per cent.)
Sick,	10	-	-	(9.17 " ")
Uncertain,	10	-	-	(9.17 " ")

Total, 109

III.—In 1892 and 1893 there were 78 calves, which had

also been fed on the milk of healthy animals. In October, 1893, they were injected (the dose being 0.2 per head). Result :

Healthy,	67	-	-	(85.03 per cent.)
Sick,	7	-	-	(8.93 " ")
Uncertain,	4	-	-	(5.12 " ")

Total, 78

Of this last table, which gives 67 healthy animals, or those which showed no reaction after the injection of tuberculine, only six were offspring of healthy parents. Sixty-one were offspring of sick cows or bulls, and after examination I found that of forty-two both parents were sick. Of eleven the father was healthy and the mother diseased, and of eight the father diseased and the mother healthy.

Of the seven calves shown to be diseased, by the test, we found that with one calf only the father, but with six calves both parents were tuberculous.

The calves of the year 1893-94, I have not as yet been able to inject ; but it shall be attended to shortly, and I have good reason to hope, as these animals have been fed on the milk of healthy cows, that the result of the investigation will be highly satisfactory.

While the calves of the year 1891, which were fed on the milk of non-tested cows, show a percentage of 41.73 per cent. diseased and uncertain animals, the years 1891-92 and 1892-93, in which milk of healthy cows alone was used, show only 13.34 and 14.10 per cent. diseased and uncertain calves.

These figures give a sufficiently abundant reason to believe that for the extirpation of tuberculosis among the offspring, this is the only and safe thing to do.

After a number of years, when all diseased cows shall have been entirely separated, and only the calves of healthy cows be raised, the percentage of reacting animals will have been reduced to a minimum or will have entirely disappeared.

The stable in which these animals declared healthy by the tuberculine test are kept, makes a very striking and happy impression. The well rounded appearance and the smooth hair of the animals is striking ; and the tell-tale cough, which

in other barns reserved for the diseased animal is heard repeatedly, cannot be heard here either at day or at night. And another thing is worth mentioning, that sickness (digestive disarrangement—the keeping back of the afterbirths) to which the diseased animals are very susceptible, very seldom appear among the healthy cattle. So also the calves, since they have been fed on the milk of healthy cows, enjoy much better health. Diarrhoea is one of the exceptional causes of sickness.

In review of the experiences made here, I think I can with certainty state that by increasing the number of healthy, and by gradually decreasing the number of diseased animals, especially, however, by the separation of diseased calves, the Kusthof herd will, in a few years, be entirely free from tuberculosis.

In regard to the economical value of a healthy herd to the owner I need not refer.

The principal advantage to him will be that the milk cows can be used as such to a much more advanced age, and can then be more easily fattened; and not, as is often the case with tuberculous cows, that, in the best lactative period, they fall away and die. Again the milk of such a herd will find much readier and more profitable sale in cities and towns, for it certainly is to be expected that parents will at last recognize of how great importance to the health of their children, not only so-called good, but healthy milk is.

According to my judgment, therefore, the first step in the direction of fighting tuberculosis among human beings is the restriction of tuberculosis in cattle. The nourishing of human beings with the product of tuberculous cows has caused more sickness and death than can easily be determined by statistics.

I hope, therefore, that the example of Hon. Von Sivers, to produce a healthy herd, will find recognition and many imitators.

POINTS IN PRACTICE.*

By JUNIOUS A. WATTLES, D.V.S., Kansas City, Mo.

I have selected for my subject "Points in Practice," for several reasons, not the least of which is the belief that it will bring out a discussion of the several subjects touched upon, and the hope that we will all become gainers by absorbing the ideas of our fellow practitioners.

It is often said that a lazy man takes the most pains to devise easy methods, and you will please accept my acknowledgment now, that my desire to avoid anything like labor has become chronic, and the hardest labor performed by me is that of finding easy ways of doing things. This will explain to you why my subject is a practical, rather than a theoretical one, as to-day the theorist is the hardest worker in our ranks.

The wisdom of the world has been gained by close observation of minute things, and some of the most practical points are sometimes obtained from the humblest sources.

In our practice we are frequently called upon to perform the very commonplace operation of castrating a "Tom-cat," and from a student attending my lectures came the welcome intelligence, to me, of an easy manner of confinement during the operation.

Follow instructions closely: Take the right posterior limb of the animal between the third and fourth fingers of the right hand; the right anterior limb between the first and second fingers of the right hand; take the right ear between the thumb and first finger of the right hand; use the left hand in a similar manner, on the left side of the animal. Your assistant holding him firmly will bring the animal's back towards the assistant, and facing the operator, in which position the operation may be performed with "neatness and despatch," aided by the proper application of a sharp knife.

Men to-day do not accept new theories as positive facts until they are proven, and if in our practice an error is dis-

*A Paper read before the Missouri State Veterinary Medical Association.

covered in the methods of treatment that our text-books and preceptors have advocated, we are not doing ourselves justice unless we make an effort to rectify that error, and to try and find a more satisfactory way for ourselves and patrons.

It is a very common occurrence in our practice to be called upon to treat open joints in horses, and we can all justly consider these cases as stumbling-blocks in practice, as the majority of us would probably testify to very unsatisfactory results obtained in the greater number of cases, and, in hopes that some benefit may be derived from misfortune, this point has been selected for to-day.

When we first enter practice in this profession, we usually follow the lines laid down by our predecessors, when called to treat one of these cases, and we use hot water, and cold water, poultices and pounded ice, liniments and injections—with the unsatisfied feeling, that, if by any chance the poor animal lives, that it would be more than likely to have complete ankylosis of the affected joint. This in itself was sufficient inducement for me to cast about for something that would give better results, and the following are my conclusions:

Make it a positive rule never to inject anything into an open joint, unless there is a discharge of pus from the wound, and then, nothing but some bland, non-irritating substance, such as olive oil or lard oil. These can be used with an unsparing hand for the first treatment, to mechanically remove the accumulation of pus, and is not to be repeated unless absolutely necessary. When one is called before the care-taker has applied or injected some one of the usual liniments, there will be no reason for injecting anything into the wound.

It is necessary in all cases to provide a large pad of absorbent cotton; a long roller bandage, either cotton or flannel; also a plentiful supply of oxide of zinc seven parts, powdered wood charcoal one part. First apply to the wound a part of the powder, then cover the pad of cotton with a liberal quantity of the same; having the pad held against the wound by an assistant, apply the bandage rather snugly, and give positive orders to let it alone for twenty-four hours, when the

bandage may be removed carefully, without wetting it, and re-applied. You will observe that the most important part is to keep all wet applications away from the wound, and to not meddle with the dressing as long as the discharge does not wet through the bandage. In case of offensive odor, a small quantity of powdered permanganate of potash may be added to the powder.

It seems to me that the use of the trocar and canula in gastric flatulence is entirely uncalled for, and many of us will be obliged to confess our inability to use such an instrument. The necessity for using such an instrument, or, rather, the condition for which it would be used, can be met by a piece of rubber tubing one-half an inch in diameter, and eight feet long. Stand facing the animal; wet the tubing; pass it into the left nostril of the animal, keeping it against the septum nasi until the pharynx is reached; then against the roof of the pharynx, and it easily passes down the œsophagus, into the stomach, allowing the gas to escape, and furnishing a means to pass medicine directly into the stomach, if desired.

In cases of obstruction of any sort in the œsophagus, the same plan can be followed in passing the tubing. In obstruction from dry material, as oats, bran, or chopped feed of any sort, pass the tube down to the obstruction and then pour large quantities of water or oil down the tube; this will float the dry material up, and it is either passed out through the tube, or through the opposite nostril. In cases of obstruction from such articles as potatoes, apples or turnips, pour down the tube either olive or linseed oil, containing a full dose of chloroform. The oil lubricates the substance and the parts, and the anæsthetic relaxes the muscle fibres, allowing the obstacle to pass down into the stomach.

After the operation of œsophagotomy, food may be passed into the stomach until such time as the wound will permit the animal to take solid food, by using the same method.

It is sometimes necessary to anæsthetize our equine patients when performing operations, and one of the simplest and best arrangements that can be made for the purpose consists of a tube or cylinder of cloth, about six inches in diameter and fourteen inches long, open at both ends and provided

with a puckering string at each end. One end of the tube is passed over the nostrils, being carried into the mouth far enough so that the upper string will be above the canine teeth, in the male. The other end of the tube contains the sponge saturated with the anæsthetic, and is closed by the lower string, which can be loosened as required. This simple arrangement allows sufficient air to pass into the lungs through the mouth, in cases where chloroform is used, and a horse can be kept under its influence for a very long time, with very little danger to the patient.

Not only in city practice, but in country practice as well, are we called upon to treat wounds of the feet; usually produced by nail punctures, and supplemented by the addition of some caustic agent to the wound by some well-meaning person. It seems to me that the use of irritating applications in punctured wounds of the feet is not only uncalled for, but is positively dangerous in the majority of cases, as they authorize the external opening of the wound and imprison the pus that is almost sure to form if the opening is closed by irritants, and compel the pus to seek an outlet through the soft tissues, usually at the heel. My advice to my patron is: When a horse picks up a nail, stop at once and remove the nail; have the horseshoer enlarge the opening in the sole; have the foot immersed for fifteen minutes in hot water, if in winter, and if in summer, for an hour in cold water. My reason for using hot water in winter and cold in summer is because we can add comfort to the animal by so doing, and not from any theoretical idea. Cases treated in this manner have never, to my knowledge, reached the suppurative stage.

In cases where suppuration is established when called, my practice is to open the abscess at the coronet, unless it is already open, which is usually the case, and then enlarge the opening in the sole, as it is absolutely necessary to have free drainage to facilitate recovery. Formerly, like many others, my practice was to poultice, but this method of treatment, with many others, has been relegated to the "has been" corner, after it had added its quota of grey hair to my already plentiful crop, that soon followed my poulticing in an outbreak of furuncle, some years ago.

If you have not already satisfied yourselves on the subject, try my method of treating the suppurating diseases of the feet by injections of linseed oil, carbolic acid, and, where there is pain in the parts, the addition of chloroform.

Two years ago, at our meeting of this association in Clinton, my subject was "Fistulous Withers," and my theory at that time was, that it was a specific, contagious disease, and the same opinion still exists in my mind. But, leaving out the theoretical points, and considering nothing but the practical phases, it seems to me that after we had seen this very common disorder treated for a lifetime by caustics and the knife, with the poorest sort of success, that we are justified in discarding, as far as possible, the irrational and barbarous methods and casting about for a new one.

My observation convinces me that fistula is permanently cured by mild methods of treatment, and is aggravated by severe methods, and that a larger percentage of cases are cured by the very mildest applications, than are cured in any other way.

With this idea in mind, my plan is to use unlimited applications of cold water, and when the abscess has not pointed, or the formation of pus is limited, to use iodine in some one of its forms externally, and hypo-sulphite of soda internally. In the cases where there is an external opening, the cold water applications are the same, and the injections into the abscess are such as will produce the very least irritation, and are used after thoroughly flushing out the cavity with clean cold water. My belief is that fistulous withers and malignant carbuncle of man are first cousins.

Another subject, and my effort to interest you is finished. My paper on the subject of "Hypodermic Injections in the Treatment of Ossific Diseases of the Joints" has brought to me many letters, and my suggestion to those who have not already made a trial of such treatment is to do so, and make some sort of a report at some of our meetings, as it is by an interchange of ideas that we are able to progress toward the highest point of perfection in our truly honorable, scientific and humane profession.

SYMPTOMATIC ANTHRAX.*

By JOHN FAUST, Poughkeepsie, N. Y.

Dr. M. R. Trumbower, Chairman of Committee on Diseases, requested me to write a paper on Tuberculosis, and in reply I stated that a paper on Symptomatic Anthrax would be in place; as to my recollection the Society never took any notice of the same, so I will endeavor to bring it before the Society.

I wrote about a hundred letters to the profession, and received a small reply, which will be embodied in the report.

ANTHRAX FEVER—HISTORICAL.

Anthrax fever is undoubtedly the oldest known disease among animals. The Bible account of the plague in Egypt is given in Exodus 5—refers in the Sixth Plague, verse 9, to this disease. And in Leviticus, mention is made of the fact that the disease can be transmitted to human beings by wearing apparel. The disease described in the First Book of Homer's Illiad may be taken to represent anthrax fever. Homer has given us a more complete description of an epidemic of anthrax fever in the Ninth Book of Metamorphose, and also Plutarch, who reports that Rome in the year 740 B. C. was visited by a very severe epidemic of anthrax fever. Dionysius of Hali Karnassus, 488 B. C., and Livius, 425 B. C., have examples of anthrax epidemic, when at first pasturing herds were affected, then the temple animals and from these the priests—then shepherds and farmers, and at last the whole population. In the writings of Lukres, 433 B. C., we first find the name *Ignis sacer* given for anthrax; in those of Colonna—*Pastulla*. Virgil describes a contagious disease among sheep—which was carried to man by the wearing of the skins of the wool taken from skins of affected animals, and which caused blisters to form that went deep into the flesh. Pliny reports of a disease of this kind in Gaul at the time of the migrations of the nations.

*A Paper read before the U. S. V. M. A., at Des Moines.

Arabian doctors describe anthrax fever as *Persian Firo*. Hezeray, 996 B. C., first used the designation *Ignis St. Antonii*. Johann Wierus describes in the second half of the 16th century different epidemics in Italy. At that time, the Senate of Venice forbade the selling of beef under penalty of death. Athanesius Kirchner describes in 1617 a disease among oxen, which passed to human beings, so that sixty thousand persons died of it. In 1662, anthrax of the tongue prevailed in violent form in Lyons, France—as also in France in 1710 and 1731.

In 1690, according to Ramazzini, anthrax was prevalent in Padua among oxen and swine. In 1713, anthrax appeared in Germany, first near Augsburg, also in Hungary; 1733, in Poland, Schlesier, Saxony; and 1731 and 1757 in France, as gloss anthrax in carbuncle of the tongue among almost all domestic animals (horses, mules, cattle, sheep, swine, deer, dogs, chickens, fish), as well as among men; 1755 and 1761 in Franken; 1758 and 1759 in Finland and Russia; 1774 in Guadeloupe (America). Chabert showed, in 1780, the similarity and unity of the different forms of anthrax fever, which he named and classified. This classification, on the whole, has been maintained up to the present time. In 1805 Kausch published an excellent description of anthrax fever, in which, however, he denies its contagiousness. The epidemics of anthrax fever in 1807, 1810, 1819 and 1827 are particularly to be mentioned. After that time a decrease may be reported. Anthrax among sheep was more especially investigated by Delafond and Gerlach (1845)—while Delafond does not recognize the contagiousness of the disease, Gerlach proved it experimentally. In 1850, Heusinger published a complete report of anthrax fever, showing it historically and geographically, in which he accepted anthrax as a *malaria neurosa*. The most important advancement in the study of anthrax was made in the second half of this century. In 1855 Pollendor published his observations, made in 1849, when he detected in the blood of diseased cattle an infinite number of small rods. Independent of this research, Davaine (Paris) also saw these rods in 1850, and Brauill (Dorpat) in 1857. Brauill also found these rods in the blood of diseased cattle during life,

and used them as a diagnostic and prognostic force, but he denied that they represented the anthrax poison. Only in 1863, Davaine proclaimed them as the cause of anthrax fever and called them bacteria—immediately, however, a storm of opposition was raised. The first to call these rods bacillæ was Cohn, who also surmised the presence of dauersporen.

To R. Koch credit must be given for having shown the development of dauersporen from the rods, and the transformation of the sporen to bacilli. He also purely bred the bacilli, and has given the biology of the bacillus anthracis.

Of very great scientific and practical interest has been the preventive vaccination against anthrax fever, first introduced by Toussaint, and afterwards propagated by Pasteur and others.

THE EXISTENCE OF ANTHRAX FEVER AND BLACKLEG IN THE UNITED STATES.

Dr. J. Hall, of Falls City, Nebraska, writes under date of July 28th, 1895, that an outbreak of blackleg occurred on the farm of Mr. J. Siretity in April, 1895. They were young stock, being fatted for market, all about one and one-half years old, in fair condition. These cattle were bought in Kansas, Missouri and in Nebraska. It attacked the Kansas cattle first, the Missouri cattle next, and last the Nebraska cattle—twenty dead out of a herd of sixty.

He further states of an outbreak of anthrax fever in horses, about eight miles from Falls City, in a drove of forty horses, out of which four died. The remaining number were placed on higher ground and better pasture.

Dr. R. R. Dinwiddie, of Fayetteville, Arkansas, says there have been reported to him two outbreaks of blackleg, with small losses; also an outbreak of anthrax fever among mules some six years ago.

Dr. Pearson, of Philadelphia, states that there have been from time to time outbreaks of anthrax and blackleg in the State of Pennsylvania, but never to a great extent or very serious. Blackleg appears occasionally in the western part Pennsylvania, and the doctor knows of ten localities where

there have been outbreaks of anthrax during the past few years.

Dr. J. H. Hollingsworth & Son, under date of July 24th, states that there are frequent outbreaks in and around Utica. He also states he has some herds which have been vaccinated, and with splendid results. In one herd especially there have been no outbreaks in five years, while farmers on both sides of him have suffered losses.

Dr. W. Huff, of Rome, N. Y., states there are frequent outbreaks in and around his district.

Dr. Tait Butler, of Starkville, Miss., states that there is considerable anthrax in Missouri, principally in the bottom lands of the Mississippi, but occasionally in other districts, especially in the Yazoo Delta, which is between the Yazoo and Mississippi rivers. Horses and mules are more or less affected every year, and occasionally it becomes enzootic. In his section it is confined almost exclusively to cattle.

The doctor has never seen a case of blackleg in Mississippi.

Dr. J. W. Connaway, of Columbia, Mo., states that they have occasional outbreaks of blackleg.

Dr. W. F. Crowe, of Devil's Lake, North Dakota, states that for two years they had outbreaks of anthrax, suffering a loss of about thirty-five head.

Dr. E. Brainard, of Memphis, Missouri, reports cases of blackleg.

Dr. R. A. Archibald, of Sacramento, Cal., says splenic apoplexy is very prevalent in the central and southern portions of the State. Anthrax is seldom seen in Northern California, but it does break out occasionally.

To show the prophylactic value of vaccination, I will give an article written by me and published in our monthly journals; also an article from the German journal, *Pratische Thierheilkunde*, edited by Prof. Fröhner and Prof. Kitt:

For twenty-nine years, to my personal knowledge, splenic apoplexia and splenic fever have occurred every year up to 1886 in a streak of swampy land about two miles long, and Mr. Noxon, one of the sufferers, says he lost \$30,000 worth

of cattle in that period. All imaginable diseases were suspected by professionals and non-professionals. I held post mortems year after year, and always found the same thing—splenic fever or apoplexia.

In the year 1885 the suspicion of poisoning was so strong that Mr. Noxon wanted a chemical analysis of the stomach. As I knew that would have been money spent for nothing, I proposed that Professor Liautard make a post mortem examination. After the post mortem he stated to the owner that the whole cause was splenic fever.

A great many medicines were used with no effect. I advocated to the owners the vaccination with anthrax virus. I even went so far as to offer to do it for nothing if it was a failure.

The following is a history of the different herds that came under my care in 1886:

On July 3d was called to see a cow belonging to Mr. Hoppe; she died before I reached her. The second cow was found dead in the lot. On July 10th was called to the third cow and put her under treatment for splenic fever (my record does not show what treatment). In twelve hours, to all appearances, she was well, but in ten hours more she died, and post mortem examination proved it to be splenic fever. The spleen weighed eight and a half pounds.

Mr. Hoppe's neighbor lost his only cow. They were the only cows these men owned.

On July 17th I was called to Mr. E. Lyons' farm. Ten days previous to my call he lost one Jersey cow. On July 16th the second cow was taken sick, to which Dr. Thompson was called and diagnosed it as dysentery. The cow died shortly after he left. On July 17th two more cows died without warning or medical care. The same day I found nine sick cows. My diagnosis was splenic fever. I was not prepared for any treatment that night. On the 18th I made a post mortem on cows that died on the 17th and found them to have had typical cases of splenic fever. I then separated the sick from the well.

The following are the symptoms and treatment of this herd:

July 18, 10:30 A. M.:

No. 1, temp. 107 deg., very restless all night.

" 2, " 106 "

" 3, " 108 "

" 4, " 103 $\frac{1}{2}$ " restless; died at 5 P. M.

" 5, " 107 $\frac{1}{2}$ "

" 6, " 101 $\frac{3}{4}$ " sinking; died at 7 P. M.

" 7, " 105 $\frac{3}{4}$ " breathing very hard.

" 8, " 108 "

" 9, " 104 $\frac{1}{2}$ "

The treatment in all these cases was fluid extract eucalyptus glob., half ounce doses, and arsenious album. 1-100, three-drachm doses, alternating every two hours.

July 19, 10:30 A. M.:

No. 1, temp. 104 $\frac{3}{4}$ deg., very restless all night.

" 2, " 106 $\frac{1}{2}$ "

" 3, " 103 "

" 5, " 106 $\frac{1}{3}$ "

" 7, " 103 " breathing almost normal.

" 8, " 105 "

" 9, " 101 $\frac{1}{3}$ "

The same treatment continued, they all eat, drink and ruminate same.

July 20, 12 M.:

No. 1, temp. 101 deg., very restless.

" 2, " 102 $\frac{1}{2}$ " very drowsy and stiff.

" 3, " 101 "

" 5, " 102 $\frac{1}{3}$ "

" 7, " 101 $\frac{1}{4}$ " breathing normal.

" 8, " 100 $\frac{1}{4}$ "

" 9, " 101 "

Continued same treatment every three hours.

July 31, 3:30 P.M.—Temperature of all the cows is normal. They all eat and drink well and have a fair flow of milk. No medicine.

On July 25th I inoculated nine cows and one calf with Chauveau's virus received from Professor Liautard. The following is the method of vaccination: Clip the hair on in-

side of thin part of the ear. Make a small incision with a sharp-pointed bistoury. Clean off the small quantity of blood and inject with hypodermic syringe two drops of the virus.

On July 26th cow No. 3 had a very alarmingly high temperature; at 11:30 A. M. temperature 107° ; at 7 P. M. temperature 106° . All the rest of the cows had a slight rise in temperature. On July 27th cow No. 3's temperature was $102\frac{1}{2}^{\circ}$, and, to all appearances, well.

The ears of all the cows where the inoculation was made were swelled to a more or less extent.

The following is the history of the herd of cattle owned by the Hudson River State Hospital:

On the 27th of March, 1887, I was called to make a post mortem examination on a young cow which had died the night previous. Results: On removing the skin the tissues appeared to be filled with dark hæmorrhagic spots; the spleen very much enlarged and of a dark color; the abdomen containing a quantity of dark serum; the kidneys were dark and ecchymosed. The statement was made by Dr. Cleveland that they had lost from ten to twelve head every year at different periods in the same manner for a number of years.

I proposed the vaccination of the entire herd with Chauveau's virus, to which the doctors of the hospital agreed. On the 31st day of March I vaccinated the entire herd of forty-four head.

The temperature after vaccination rose from 1 to 6 degrees, with slight swelling of the ears—one was very badly swollen.

Of those vaccinated two died after a lapse of four years and four months of splenic apoplexia,—fortunately in a place where no cattle have been kept since.

I also vaccinated the herd of Mrs. Wiley, consisting of thirty-three head, and Mr. J. Rose's herd of sixteen head. There was no table of temperature kept of these two herds.

Since 1887 there have been but two cases of splenic apoplexia (the two of the Hudson State Hospital) in the whole district.

Every year for over thirty years this disease has claimed its victims.

This is certainly very gratifying for the use of the prophylactic treatment of this disease.

Extract taken from the yearly report of veterinary work done in Hungary, compiled by Prof. Dr. F. Hutyra, in Buda Pesth, under the direction of the Government Agricultural Department:

During the year 1893 296 horses, 2,836 cattle and 1,092 sheep died of anthrax fever.

The results of the vaccination in Hungary for the year 1893 are as follows:

I.—*Preventive vaccination* against anthrax fever.

The Pasteur-Chamberland laboratory of Buda Pesth delivered anthrax vaccine from October, 1886, to the close of 1893, as per tabulated statement:

In 1886,	for 106 horses,	900 cattle and	3,500 sheep
1887,	" 180 "	7,296 "	45,003 "
1888,	" "	10,500 "	39,430 "
1889,	" 337 "	16,073 "	37,375 "
1890,	" 2,039 "	21,339 "	178,542 "
1891,	" 2,828 "	36,457 "	274,811 "
1892,	" 3,836 "	54,633 "	366,310 "
1893,	" 6,430 "	91,016 "	361,505 "

Concerning the vaccination of horses reports have been received from 68 farms for 2,573 vaccinated horses. Of these no loss was reported between the first and second vaccinations; but within twelve days after the second vaccination four horses died of anthrax fever, while during the rest of the year the remaining horses were perfectly free from fever.

The total loss of vaccinated horses was 4—0.15 per cent.

Taking the sum total of vaccinated horses (6,665) between 1889 and 1893 we have the following result:

Loss after the first vaccination, 5—0.07 per cent.

" " second " 6—0.09 "

" during the year " 4—0.06 "

—————
15—0.22 "

Reports received in regard to the vaccination of cattle from 257 farms for 35,967 vaccinated cattle give the following result:

Died of anthrax fever:

After the first vaccination, 4—0.01 per cent.

“ second “ 5—0.01 “

During the year, - 5—0.01 “

15—0.03 “

The sum total of reports received for 87,430 vaccinated cattle between 1886 and 1893 gives the following result:

Loss after first vaccination, 35—0.04 per cent.

“ second “ 37—0.03 “

During the year, - 64—0.07 “

Total loss, 127—0.14

Reports were received in regard to the vaccination of sheep from 130 farms for 153,717 vaccinated sheep as follows:

Died of anthrax fever:

After the first vaccination, 193—0.13 per cent.

“ second “ 89—0.05 “

During the year, - 570—0.37 “

Total loss, 851—0.55

Take the sum total of reported cases for 1889–1893, making 388,743 vaccinated sheep, we have the following result:

Loss after the first vaccination, 1,534—0.49 per cent.

“ second “ 760—0.19 “

During the year, - - 2,668—0.68 “

Total loss, 5,012—1.36

II.—*Preventive vaccination against blackleg.*

Against blackleg on one farm in Comitate, Kelees, 75 cattle, and in Comitate, Pesth, Pilis, Kiskien, on nine farms, 2,348 cattle were vaccinated.

Of the vaccinated cattle two died immediately after the first vaccination, and during the year three more, making a total of 5, or 0.20 per cent.

Before the vaccination, during the same year, on the same farms, 69 or 2.70 per cent. died of blackleg.

AN IMPROVED METHOD OF PLANTAR NEUROTOMY.

By M. H. McKILLIP, M.D., V.S.

A Paper Read before the U. S. V. M. A., at Des Moines.

It is well known to all practitioners who perform a large number of operations of plantar neurotomy that its practical result is sometimes unsatisfactory on account of an early uniting of the nerve-ends, with subsequent recurrence of feeling and lameness, no matter how long a section of nerve may have been removed. To overcome this annoying result I have experimentally tried to perfect the *modus operandi* in different ways, and the result has been so satisfactory that I think it expedient to report it for the benefit of those who are called upon to perform this operation.

As the technique of the operation is familiar to you, I shall only refer to the difference of my methods. First of all I have devised a certain preparation of the limb for the operation, which is quite essential. Three days before operating, a cantharides blister is applied over the seat of operation. This is washed off after twenty-four hours, the cuticle removed and vaseline applied to the part. The object of this procedure is to secure a clean field for operation and rapid union. The blister removes the hair and cuticle, doing away with the hair stubbles always left by the clipper, which are an irritating agent. It leaves a clean, smooth surface and prepares, as nearly as possible, for an aseptic operation and dressing. It excites inflammation of the skin, and the slight swelling and increased circulation promote a union by first intention, a result seldom obtained by the old methods, especially in animals with a thin skin. There is a tendency to produce a little more hemorrhage during incision, but if any should object to this it is easily prevented by the application of a simple tourniquet.

The operation itself is performed as usual until the nerve has been dissected and cut on its upper end. Then it is dissected downwards to a length of one and a half inches and firmly drawn up with forceps by an assistant, while the operator applies a silk ligature to the lowest part of the distal end,

tying it as securely as possible with a surgeon's knot. The dissected nerve-trunk is cut above the ligature and the silk is allowed to hang out of the lower part of the incision to the length of about one inch. No stitches being used, a cotton bandage, saturated with a solution of bichloride of mercury is applied to the fetlock, which draws firmly together the edges of the incision. Over this is again laid an antiseptic flannel bandage. Within three days after the operation the bandages are removed, when the wound will be found to have united by first intention, with the exception of the lower end, out of which the ligature is now carefully and easily removed. When the ligature comes off, the nerve-end is cicatrized, a granulating process is obviated, and the union of the nerve-ends thus made impossible. The parts are dressed and the bandages replaced in order to support the newly united tissues. Shower baths for a few days have been found of good service, and in from five to ten days the horse is again ready for work—a result which can hardly be obtained by the old methods.

Of about one hundred horses so operated upon by me since February last, no report has been made so far of an unsatisfactory result, and all those cases which could be kept under observation have proved a decided success, not only from a surgical view, but also from the practical results obtained.

CONTRIBUTION TO THE STUDY OF SWINE PLAGUE, HOG CHOLERA AND PNEUMOENTERITIS OF SWINE.

By W. SILBERSCHMIDT, M.D., Assistant to the Hygiene Institute, Zurich.*

[*Continued from page 335.*]

EFFECTS OF THE TOXINE.

As we have said before, the microbes of *hog cholera* and of *swine plague* are killed by being kept a certain length of time to a temperature of 58°. To this effect I heated the culture or the blood received in a glass tube closed at both ends, with the alcoholic lamp, in a water bath kept at an even constant temperature.

*Translated from the Annales de l'Institut Pasteur.

The planting of the blood or of the culture thus heated remains sterile, and the injection of small doses of this liquid ($\frac{1}{2}$ cc.) produces no trouble in the rabbit. But by opposition, the injection of larger doses is not so harmless; it may produce death by intoxication.

Let us consider, first, the toxine of *swine plague*, to which I gave special attention. My experiments justify me to entirely endorse those of Selandier; but as I have not injected as large quantities of toxic blood as he did, I have not to record as rapid a case of death. An intravenous injection of 2 to 4 cc. of blood kills the rabbit in from 12 to 24 hours. There are individual differences; while the virus kills surely in a given time, some animals resist better than others the action of toxine.

Two kinds of intoxication must be recognized—the acute and the chronic. In the first, one observes the same morbid symptoms following the injection of virus; the latter, after a variable time, produces death by cachexia.

For *swine plague* the results have been noticeably the same, no matter what liquid was injected: heated blood, blood sterilized with thymic acid or formic aldehyde, bouillon cultures or those of emulsified gelatin in bouillon and sterilized by heat; or, again, cultures free from their microbes by filtration through the Pasteur bougie.

The quantities injected have varied between $\frac{1}{10}$ and 10 cc. The cultures were supported in a larger dose than the blood, and contained less toxine. And, again, blood sterilized with thymic acid has shown itself more toxic than heated blood, and it has seemed to me that the repeated or longer action of heat diminished the toxic power.

The largest number of intoxicated rabbits died with cachexia. Quantities of toxic liquid not exceeding 1 cc. were generally well tolerated; in one case, however, 1 cc. of blood has produced death in 20 hours. The injection of 2 cc. of blood, or of 3 to 5 cc. of sterilized culture, produced a noticeable diminution in the weight, varying from a quarter to a third of that of the general weight of the rabbit. The maximum of this diminution is observed after a few days (1 to 3)

after the injection ; then, if the animal resists, it gradually and in a variable length of time increases and returns to its initial weight. In other times, the diminution is progressive and brings on death in from 8 to 15 days, or one month, and even later. I mention a few experiments :

No. 47.—1k-600 ; injection of 2 cc. blood sterilized by heat ; death in less than 24 hours ; blood and cultures sterile.

No. 63.—1k-750 ; injection, $2\frac{1}{2}$ cc. blood sterilized with heat ; death in less than 16 hours ; blood and cultures sterile.

No. 86.—2ks ; injection, 1 cc. blood sterilized by heat, and addition of 2 drops of Gram solution ; death in less than 20 hours ; blood and cultures sterile.

No. 213.—Injection of 4 cc. of blood, diluted in about its volume of water, and sterilized with thymic acid ; death in 12 to 16 hours ; blood and cultures sterile.

No. 51.—1k-960 ; injection of 3 cc. of blood sterilized by heat, with addition of 6 drops of solution of Gram. The next day the weight is of 1k-810 ; the third day of 1k-660 ; the ninth day of 1k-810.

No. 9.—1k-575 ; 4 injections made 5 to 6 days apart, each of 1 to $1\frac{1}{2}$ cc. of blood diluted half in water and sterilized at 58° . After the fourth injection the rabbit weighed 1k-785.

No. 54.—1k-835 ; injection of $2\frac{1}{2}$ cc. of blood sterilized at 58° . The next day the rabbit weighs 1k-690. Seven days later, 1k-900. Several injections of doses successively weaker ($\frac{1}{2}$ to 1 cc.) are supported without symptoms.

No. 199.—2k-100 ; injection of 4 cc. bouillon cultures filtrated with Pasteur bougie. The third day the rabbit weighs 1k-870 ; the fourth, 1k-775 ; the tenth, 1k-760, and five days later, 1k-570. He dies in the night of the twentieth day. The blood and cultures remain sterile ; the spleen is very small.

No. 145.—1k-900 ; three successive injections of 1 cc. of heated culture at 60° ; slight diminution of the weight. After the third injection, 1k-870 ; five days later, new injection of 4 cc. of culture, and kept in the autoclast $1\frac{1}{4}$ months, and afterward sterilized at 58° . The rabbit weighs but 1k-575 on the 8th day, and 1k-510 the 13th day ; then it gradually improves and has regained its weight towards the end of a month. It still enjoys good health.

No. 183.—1k-710 ; injection of 1 cc. of culture filtrated with Pasteur bougie ; the next day 1k-550, then 1k-670, and after 12 days 1k-725. A second injection made then of 2 cc. with same culture is followed by diminution of weight, 1k-545, but the animal resists, and after 15 days is well.

No. 237.—2k-150 ; injection of 9 cc. of culture filtrated with Pasteur bougie. The 4th day 1k-945, the 7th 1k-745, the 18th 1-980, after one month 1k-895, after 45 days 1-615. The rabbit died on the 57th day after the inoculation ; spleen very small ; blood and culture sterile.

No. 195.—2ks ; subcutaneous injection of 12 cc. of culture heated seventeen days for five minutes at 120° ; the 2d day 1k-655, the 4th 1k-860, the 11th 1k-725, the 21st 1k-810, after a month 2ks.

No. 338.—1k-910 ; subcutaneous injection of 11 cc. of culture sterilized at 120° during five minutes ; during 11 days the weight remains between 1k-520 and 1k-650 ; the rabbit was not observed afterwards.

No. 339.—1k-610; subcutaneous injection of 4 cc. of the same culture sterilized at 120° during five minutes; the next day the rabbit weighs 1k-440, the 5th 1k-335, the 11th 1k-125; he is moribund and observed no longer.

The injections that are not specified were made in the marginal vein of the ear.

In a few cases I have added from 2 to 6 drops of Gram solution to the liquid to be injected, with the object to have a vaccination more efficacious, but it was not so; small quantities of iodine are well tolerated.

For *hog cholera*, the results are analogous; but, as in the beginning, the microbes did not possess a constant virulency; it has happened that some rabbits supported large doses of blood or of sterilized culture, while others exhibited serious symptoms with small quantities of toxine. The sterilization with the thymic acid was longer and less certain than for *swine plague*. Here are some experiments:

No. 218.—Intravenous injection of 4 cc. of diluted blood (2 cc. nearly of pure blood) sterilized with thymic acid; death in 36 hours; blood and cultures sterile.

No. 262.—Injection of $2\frac{1}{4}$ cc. diluted blood sterilized with thymic acid; death in about 12 hours; blood and cultures sterile.

No. 140.—2k-160; injection of 3 cc. of culture heated at 58°; death in $2\frac{1}{2}$ days; reduction of weight of 450 grammes; blood and cultures sterile.

No. 131.—1k-810; injection of $\frac{3}{4}$ cc. of blood sterilized by heat; the 3d day 1k-540, the 12th 1k-690, the 21st 1k-840.

No. 268.—1k-720; injection of $\frac{1}{2}$ cc. of blood sterilized by contact with thymic acid; the next day a second injection of 1 cc.; great reduction of weight; the 3d day 1k-515, the 6th 1k-400, the 8th 1k-375, the 16th 1k-415, the 21st 1k-480, the 28th 1k-650, and the 34th 1k-800.

No. 146.—1k-640; injection of 2 cc. of culture on gelosis diluted in bouillon and sterilized. Initial weight the 8th day; 28 days after the first injection the rabbit receives $2\frac{1}{2}$ cc. of culture also sterilized by heat; the day after he weighs 1k-535; 8 days later 1k-450; a third injection made ten days after the second brings the weight down to 1k-450, and the animal requires more than a month (40 days) to recover his former weight.

No. 254.—1k-700; injection of 1 cc. of blood sterilized with thymic acid; the third day 1k-860; second injection of 1 cc. with a slight reduction of weight, 1k-760; a third injection of the same blood is made eight days later (weight 1k-835); the third day after, 1k-600; this weight remains, and the rabbit dies nine days after the last inoculation. Small spleen; blood and cultures sterile.

The two experiments last described show how little the organism gets accustomed to the toxine. We can resume the results in the following propositions:

1st.—In general, the blood and cultures of *swine plague* and of *hog cholera* that I have used have given manifestations of intoxication in the rabbit starting from a dose of $\frac{1}{2}$ cc. upward.

2d.—The phenomena of intoxication are of three orders:

(a)—Acute intoxication and death in from 24 to 48 hours, with symptoms analogous to those obtained with injections of virulent cultures.

(b)—Chronic intoxication, followed with reduction in flesh and cachexia, ending by death in a length of time varying from between a few days to one and two months; at post mortem no lesions, only a very small spleen.

(c)—Chronic intoxication, followed by the return of the animal to health after a variable length of time.

3d.—Weak doses to 1 cc. are ordinarily well tolerated without giving rise to any noticeable troubles.

4th.—I have not been able to observe that rabbits become accustomed to toxine; rabbits that had received several injections of small quantities of toxine reduced in weight when the dose was increased.

5th.—The blood of animals dead by an injection of one of the microbes sterilized by heat and by thymic acid is more toxic than equal quantities of sterilized cultures.

6th.—Cultures filtrated with the Pasteur bougie, or heated for a few minutes to 110° or 120° , do not lose their toxic action, but bring on symptoms analogous to those produced by cultures heated to 58° .

7th.—The properties of toxines do not allow the differentiation of *hog cholera* and *swine plague*.

VACCINATION AGAINST SWINE PLAGUE AND AGAINST HOG CHOLERA.

Animals that have resisted to several injections of toxine have shown themselves refractory to the inoculation of the viruses.

For *swine plague* I have succeeded in vaccinating rabbits by several ways, viz., by repeated injections of—

1st.—Blood sterilized by heat (58 to 60°) or by thymic acid.

2d.—Cultures sterilized by heat (58 to 60°).

3d.—Cultures filtrated with Pasteur bougie.

Besides, I have obtained partial, though evident, results with—

4th.—Cultures sterilized at 120° .

5th.—Blood of vaccinated animals.

Following are some examples in support of these data :

No. 9.—Weight the 28-IV, 1k-575 ; four injections of $5\frac{1}{2}$ cc. of diluted blood sterilized at 58° ; the 28-V, a month after the first injection, he receives $\frac{1}{20}$ cc. of virulent culture. The witness dies in less than 24 hours.

Second injection of trial the 6th-VI ; the witness dies also in less than 24 hours. The vaccinated rabbit, after a few days, has an abscess at the point of inoculation, treated by incision and cauterization with the red cautery.

Third trial the 26-VII with similar result, though one month and a half has elapsed since the last injection ; the witness dies. In these two months the subject has gained 480 grammes.

No. 54.—Weight the 26-VII, 1k-835 ; four injections, in all $5\frac{1}{2}$ cc. of blood sterilized by heat. The first trial takes place the 18-VIII, two days after the fourth injection ; the witness dies in less than 16 hours ; the vaccinated animal resists. After being injected again, in three sittings, $2\frac{1}{2}$ cc. of heated blood, he is submitted to another trial the 28-X and resists it, having, it is true, an abscess that I cauterize 12 days later ; he weighed then 2ks-250—an increase of 400 grammes.

No. 25.—Weight the 3d-IV, 1k-730 ; six injections, altogether 8 cc. of bouillon culture and gelosed culture diluted in sterilized bouillon ; the injections are made far apart at first, on account of the reduction in weight. First trial the 17-XII, 13 days after the last injection of toxine ; the rabbit weighs 2ks-450 ; the witness dies in less than 18 hours ; two other trials are equally well tolerated.

No. 224.—Weight the 2-III, 1k-960 ; four injections, altogether 18 cc. of bouillon cultures sterilized at 58 to 60° ; first trial the 29-IV, the rabbit has a small abscess which opens of itself ; the witness dies in less than 10 hours ; three new trials the 17-V, 10-VI and 14-VI.

No. 183.—Weight 17-I, 1k-710 ; three injections, altogether $5\frac{1}{2}$ cc. of bouillon culture filtrated with Pasteur bougie ; the rabbit stands two trials the 19-II and the 14-III, after receiving $2\frac{1}{2}$ cc. of filtrated culture the 2-III. The 23-III he weighed 1k-925.

No. 197.—Weight the 29-I, 1k-600 ; four injections, altogether 8 cc. of diluted blood (about half of water) sterilized with thymic acid ; trial the 10-III ; the witness dies in less than 16 hours ; two other trials the 19-IV and 2-V, with witness in the last. The 17-V the rabbit weighs 2ks-300.

No. 198.—Weight the 29-I, 1k-620 ; three injections, altogether 9 cc. of diluted blood sterilized with thymic acid ; three trials the 19-II, 27-II and 7-III ; the witness injected on the third trial dies in less than 10 hours. The rabbit weighs 2ks-100 the 13-III.

No. 195.—Weight the 27-I, 2ks ; injection of 12 cc. of culture heated at 120° during five minutes ; the rabbit has regained his initial weight the 26-II ; he is, like most of the rabbits to test, injected with $\frac{1}{20}$ cc. of virulent culture under the skin of

the ear; large abscess, and death in the night of the 6th of March. At post mortem, on same side of injected ear, purulent pleurisy, and purulent collections in the left lung. The sowing from the blood and from one of the abscesses gives pure cultures of *swine plague*.

I wish to remark that most of the animals have presented during the duration of the vaccination and after the test injection a noticeable increase in their initial weight, which proves that the toxine has no bad, lasting effect on the organism.

The experiments of vaccination with the serum will be considered further on.

As to *hog cholera*, the results of the vaccinations are far from being as brilliant; this is specially due to the fact that at the beginning the virulency of the microbe was much less active, and, besides, uncertain, as well as to its toxicity. Later on the results were better.

No. 132.—Weight the 10-I, 1k-910; five injections of blood and cultures sterilized by heat ($5\frac{1}{2}$ cc. of blood and 6 cc. of cultures); the rabbit resists the 1-II to a first test, which kills the witness, but he dies after a second injection of virus the 23-II in less than 24 hours. Pure cultures of *hog cholera*.

No. 139.—Weight the 21-XI, 2ks-160; four injections, altogether 8 cc. of sterilized culture; tested the 19-II, the rabbit, which weighed 2ks-240, dies in less than 16 hours. The blood gives pure culture.

No. 146.—Weight the 30-XI, 1k-640; after seven injections of sterilized culture, altogether 18 cc., the rabbit dies the 31-III, in less than 24 hours after the injection of test.

No. 173.—Weight the 6-I, 1k-750; receives 19 cc. of sterilized culture in seven injections, and weighs 2k-370 the 31-V, date of the trial. The witness dies in 18 hours, while the subject vaccinated lasts about 60 hours. Pure cultures.

No. 178.—Weight the 13-I, 1k-600; seven injections, altogether 34 cc. of sterilized cultures, some by heat, others by filtration with Pasteur bougie; test the 27-III, weight 1k-990; the witness dies in 48 hours; the rabbit treated during nine days, 1-IV; he then survived more than seven days. At the post mortem were found, an abscess which had given rise to a large tumefaction of the ear and of the neck, right purulent pleurisy, small superficial abscesses in both lungs, left lung extensively hepatized; cultures with the pus and blood are positive, though these last were weak.

No. 260.—Weight the 3-IV, 1k-860; six injections, altogether 8 cc. blood sterilized at 60°; first test, the 12-VI, weight 2ks-430; the witness dies in 24 hours, the subject treated continues to do well; a second injection of *hog cholera* culture is well supported the 19-VII.

No. 311.—Weight the 18-V, 1k-680; four injections, in all $7\frac{1}{2}$ cc. of diluted blood sterilized by long contact with thymic acid; test injection the 22-VI, weight 1k-900; no noticeable effects. The witness dies in less than 18 hours.

No. 314.—Weight the 21-V, 1k-720; six injections, in all $6\frac{1}{2}$ cc. of sterilized blood at 58° . Test injection, made the 13-VI, kills the witness in 18 hours, and gives rise in the vaccinated rabbit to a small abscess, which remains localized.

Vaccination against *hog cholera* is possible, and takes place as that of *swine plague*. The cultures have not given me good results, as they were not virulent enough, and probably did not contain, after sterilization, enough toxines.

To resume, rabbits are liable to be vaccinated against *swine plague* and *hog cholera*. For the former I have obtained—thanks to the virulency of the bacillus—good vaccination by repeated injections of sterilized blood and of cultures heated at 58° or filtrated. The injected quantity each time must be weak, 1 cc. and even less for the blood, $\frac{1}{2}$ cc. for the cultures. These doses are supported without sensible symptoms, and it is possible to have the injections repeated at short intervals, and to thus obtain a rapid immunity against the virus. If, on the contrary, one injects a too large quantity of toxine, the animal reduces considerably in weight, often dies, and if it resists, requires a long time to recuperate to its initial weight. And besides, the degree of vaccination does not depend directly on the absolute quantity of injected toxine, as it was proved by several observations; rabbits were vaccinated in ten days by a daily injection of $\frac{1}{10}$ to $\frac{2}{10}$ cc. of sterilized blood, when the same quantity, injected at once, gave rise to great reduction in flesh and failed to vaccinate. Before injecting another dose, one must wait until the animal has regained its initial weight, or he runs the risk of seeing him die, or at all events to see him lose still more flesh; also the vaccination takes longer to be perfect. As a general rule, rabbits have stood the test inoculation after having received 3 to 5 cc. of sterile blood; for the cultures, the necessary quantity to vaccinate is greater, and varies in proportions, though in two cases 7 cc. proved sufficient. It is clearly evident that quantities of cultures heated at 100° and 120° must be much larger to produce the same effect. To the point of view of the vaccination of the rabbit, there are, then, only differences of quantity between *hog cholera* and *swine plague*.

It remains for me to speak of the vaccination of a dog

against *swine plague*—a small animal, weighing about 5 kilogrammes:

After a first injection of $\frac{1}{6}$ cc. of virulent culture of *swine plague*, made the 22-II, the animal became very ill; the next day he remained lying on his side; does not eat, and grunts instead of barking; its temperature rises from 38.4 to 40°; this serious condition lasts three days. The 28-II I opened an abscess, the size of a nut, at the point of inoculation, and a reddish pus escapes, containing many leucocytes and microbes (I obtained pure culture with them); the dog soon recovers. The 3-III the abscess is closed; two days later a second subcutaneous inoculation is made of $\frac{6}{10}$ cc. of bouillon culture of *swine plague*. The dog seems a little out of sorts for a few days following, but soon recovers without other abscess.

The third injection of 1.5 cc. of culture is made the 12-III; and as the animal remains in good health, receives 1.25 cc. of virulent blood the 14-III, and seems sick the next day; eight days later, the 22-III, fifth injection of 3 cc. of bouillon culture; the 24-III, sixth inoculation of 2.5 cc. of virulent blood. Following this, the dog is sick for several days, and has an abscess analogous to the first, which is opened the 27-III. The 30-III, seventh injection of 2.5 cc. of virulent blood; very ill the next day, the dog eats nothing, but little by little recuperates and seems well the 5-IV. The eighth injection is made the 19-IV; the animal receives 3 cc. of bouillon culture, which he tolerates without morbid manifestations.

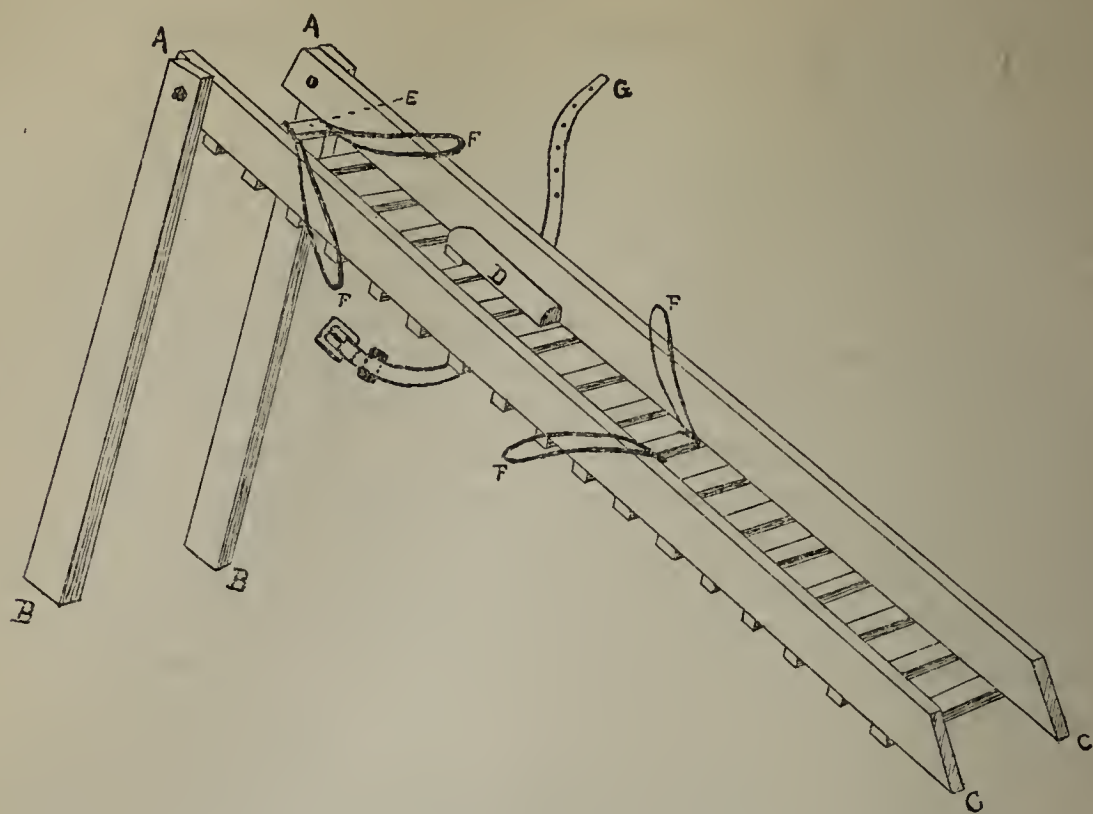
This experiment proves that dogs are sensitive to *swine plague* to a lesser degree than rabbits; that they get used to it easier and can stand doses of virus relatively very large. At equal quantity, or even at an inferior one, the blood has produced symptoms more serious than the cultures; and it is not possible to tell if this is due to its greater virulency or its greater toxicity.

(*To be continued.*)

CONFINING BITCHES FOR SPAYING.

By Prof. M. H. REYNOLDS, University of Minnesota.

I was once asked to operate on a bitch in the country, where I could not even have the advantage of a table or a carpenter's bench. The only thing in sight was a ladder, which was leaned, trough up, against the barn, on the shady side. The subject was tied by the hind feet to a round as high as the operator's shoulder, and the front feet stretched down and tied to another round, the bitch on her back in the trough of the ladder. This proved so satisfactory that, on



my return home, the above illustrated apparatus was made at once, and has since been used in quite a number of operations with great satisfaction. It may be used to confine any small animal, and will confine them in any position that may reasonably be desired.

The pieces A C are 2x4 and 7 ft. 10 in. long; the pieces A B are 5 ft. 8 in. of 2x4; the pieces which correspond to steps of ladder are 1x2 and 12 in. long, 3 and $3\frac{3}{4}$ in. apart; the pieces D, of which there should be four, are used for blocking in the subject; they are 12 in. long, 2x3, and rounded off at the corners. F F are strips of strong muslin, 2 in. wide, 18 in. long, and are doubled into a loop, which is again doubled at the loop end and slipped over the limbs just above the feet. We also use a large strap (G), which is buckled around the pieces A C and the breast of the subject after she is in position. It will readily be seen that the subject may thus be rigidly confined, for either flank or median line operation; the intestines will drop downward and out of the way except with very plump and very fat pugs; the subject is at a convenient height for the operator; and, finally, the apparatus may be moved so as to get best light from any direction.

Suggestions for the Operation.—When the subject arrives several days before the operation, it is a good plan to keep

on milk or at least fluid diet, and give a generous dose of oil twenty-four to thirty-six hours before the operation, to simplify the operation and to rid the intestines of a variety of germs and their toxins, with the fæces, thus cleaning out the intestines, and securing more nearly an intestinal asepsis.

We prefer to use morphia instead of an anæsthetic, and give rather small doses, one-twelfth to one-quarter grain, hypodermically, twenty minutes before beginning the operation; operate in the median line; make the incision extending downward or anteriorly to the umbilicus. The cut should be exactly in the median line and be made at one sweep—not a little hole to be pieced out by several hacks. Have two dishes of antiseptic fluid (bichloride 1:2000), one of which is used first for cleansing the abdominal surface to a generous distance around the site of operation, and is then put aside; the other is to be hot and used for sponging the wound. Introduce the forefinger, and then, instead of hunting for the ovary, slide the finger down the internal abdominal wall and hook it around the horn of uterus on either side; pull gently and there will be no trouble in finding the ovary. The ovaries may be removed with scissors, in the case of young subjects that have never been in heat, and with ecraseur, torsion forceps or, better still, by a strong and clean finger or thumb nail. Blood should be removed as thoroughly as possible from the cavity, for good appearances anyhow, although a little blood does not seem to be a very serious matter so far as recovery is concerned, if we may judge from the fairly good results which some operators get in practice who seem very careless in this respect. For suture material, I prefer in the order named, wire, silkworm gut and ordinary surgeons' silk, and usually insert three sutures to close the wound. Bandages of all descriptions are nuisances and useless bother.

In case the operator feels doubtful about securing union by first intention, he may apply a light dressing of powdered boracic acid or a combination of boracic and salicylic acids to the wound surface before closing. Neither of these is irritating and both are soluble. The former is more readily soluble, and should perhaps have the preference.

When the wound has been closed and cleaned, apply an old-fashioned dressing of pine tar and turpentine, 6 to 1. The turpentine is added only to make the tar a little more fluid, and the mixture gives a dressing which protects the wound fairly well from outside factors and yet will readily allow the escape of fluids should such collect. As a further protection against flies, dust a generous coating of iodoform or iodoform diluted with boracic acid over the tar mixture. Allow fluid diet for the first two or three days, and gradually come on to the more solid and bulky. Give a daily application of iodoform to the operation site; remove the end sutures on the seventh or eighth day if all is well, and the middle one on the tenth day.

VETERINARY COLLEGES OF NORTH AMERICA.

The present month will witness the opening of every veterinary college on this continent, and, as they have become quite numerous, we present herewith a general résumé of the salient points connected with each of them. We have classified them according to the number of terms which are necessary to be attended previous to graduation, and have omitted adjunct chairs and collateral branches. We have omitted Cornell, for the reason that she does not become a veterinary college until next year, and the California school because we have not accurate data upon the subject.

The list will be found to contain the fundamental branches taught, with the teacher in charge of each; the fees charged; and the address of the executive officer of each institution.

THREE-TERM SCHOOLS.

AMERICAN VETERINARY COLLEGE, 139-141 W. 54th St., New York City.

Fundamental Faculty.—A. Liautard, M.D., V.M., Professor of Anatomy, Operative Surgery, Jurisprudence and Sanitary Medicine. J. B. Stein, Professor of Physiology. James L. Robertson, M.D., D.V.S., Professor of Theory and Practice and Clinical Medicine. Chas. A. Doremus, M.D., Ph.D., Emeritus Professor of Chemistry. Roscoe R. Bell, D.V.S., Professor of Therapeutics, Materia Medica and Hygiene. John Elmer Ryder, D.V.S., Professor of Obstetrics and Cattle Pathology. Wm. J. Coates, M.D., D.V.S., Professor of Operative Surgery and Physical Diagnosis, and Clinical

Lecturer to Hospital of College. L. H. Friedburg, Ph.D., Professor of Chemistry and Toxicology.

Fees.—Tuition, \$100 each year; matriculation, \$5 each year; dissection, \$10; graduation, \$25.

Address A. Liautard, M.D., V.M., Dean, 141 West 54th St., New York City.

NEW YORK COLLEGE OF VETERINARY SURGEONS, 154 E. 57th St., N. Y. City.

Fundamental Faculty.—H. D. Gill, V.S., Professor of Theory and Practice of Veterinary Medicine. George P. Biggs, M.D., Professor of Physiology. John H. Huddleston, M.D., Professor of General and Comparative Pathology. R. S. Huidekoper, M.D., Veterinarian, Professor of Anatomy and Practice of Surgery. R. W. Hickman, Ph.G., V.M.D., Professor of Diseases of Cattle and Obstetrics. Jno. A. Mandel, Professor of Chemistry. August C. Hasslock, V.S., Professor of Materia Medica and Therapeutics.

Fees.—Tuition, \$75 a year; matriculation, \$5 each year; dissection, \$10 first and second year; histology, \$5 first and second year; examination, \$10 second year, \$15 third year.

Address Harry D. Gill, Dean, 154 East 57th St., New York City.

HARVARD UNIVERSITY—SCHOOL OF VETERINARY MEDICINE.

50 Village Street, Boston, Mass.

Fundamental Faculty.—Chas. P. Lyman, F.R.C.V.S., Professor of Veterinary Medicine. Henry P. Bowditch, M.D., Professor of Physiology. J. Collins Warren, M.D., Professor of Surgery. Edward S. Wood, M.D., Professor of Chemistry. Frederick H. Osgood, B.S., M.R.C.V.S., Professor of Veterinary Surgery, and Surgeon in charge of Hospital. Henry F. Leonard, M.D., M.D.V., Instructor in Anatomy. Kenelm Winslow, B.A.S., M.D.V., M.D., Assistant Professor of Veterinary Therapeutics.

Fees.—Tuition, \$150 a year (if in two payments, at the first, \$90, at the second, \$60). No charge for matriculation nor graduation.

Address Chas. P. Lyman, F.R.C.V.S., Dean, 50 Village St., Boston, Mass.

UNIVERSITY OF PENNSYLVANIA—DEPARTMENT OF VETERINARY MEDICINE.

36th and Pine Sts., Philadelphia, Pa.

Fundamental Faculty.—Horatio C. Wood, M.D., LL.D., Professor of Materia Medica, Pharmacy and General Therapeutics. Theo. G. Wormley, M.D., LL.D., Professor of Chemistry and Toxicology. John Guiteras, M.D., Professor of General Pathology and Morbid Anatomy. Jno. Marshall, M.D., Nat. Sc. D., Assistant Professor of Chemistry. Simon J. J. Harger, V.M.D., Professor of Veterinary Anatomy and Zootechnics. Leonard Pearson, B.S., V.M.D., Professor of Theory and Practice of Veterinary Medicine. Jno. W. Adams, A.B., V.M.D., Assistant Professor of Veterinary Surgery and Obstetrics. Wm. S. Carter, M.D., Assistant Professor of Comparative Physiology.

Fees.—Tuition, \$100 each year; matriculation, \$5, first year only; dissecting material, \$5 first and second year; material for surgery, third year, \$8.

Address Jno. Marshall, M.D., Nat.Sc.D., Dean, 36th and Pine Sts., Phila., Pa.

McKILLIP VETERINARY COLLEGE, 1639 Wabash Avenue, Chicago, Ill.

Fundamental Faculty.—Olof Schwarzkopf, V.M.D., Professor of Theory and Practice, Histology, Pathology, Helminthology, Bacteriology, and Sanitary Science. M. H. McKillip, M.D., V.S., Professor of Clinical and Operative Surgery. James M. Wright, D.V.S., Professor of Cattle Pathology, Embryology, Obstetrics, and Canine

Practice. L. A. Merillat, V.S., Professor of Anatomy and Dental Surgery. W. H. Rumpf, A.M., M.D., Professor of Materia Medica and Natural History. Otto Folin, B.S., Professor of Chemistry and Physics. J. H. Honan, M.D., D.V.S., Professor of Physiology.

Fees.—Tuition, \$100 each year; matriculation, \$5; graduation, \$10.

Address Olof Schwarzkopf, V.M.D., Dean, 1639 Wabash Ave., Chicago, Ill.

McGILL UNIVERSITY—FACULTY OF COMPARATIVE MEDICINE AND VETERINARY SCIENCE, 6 Union Ave., Montreal, Canada.

Fundamental Faculty.—Professors D. McEachran, F.R.C.V.S., V.S. Edin., D.V.S., M. C. Baker, D.V.S., Charles McEachran, D.V.S. Associate Professors G. P. Girdwood, M.D., Geo. Wilkins, M.D., D. P. Penhallow, B.Sc., Wesley Mills, M.A., M.D., D.V.S., A. D. Blockader, B.A., M.D., J. G. Adams, M.A., M.D.

Fees.—Tuition, \$60 each year; matriculation, \$5 each year; graduation, \$20.

Address Charles McEachran, Registrar, 6 Union Ave., Montreal, Canada.

KANSAS CITY VETERINARY COLLEGE, 310 East Twelfth St., Kansas City, Mo.
(Three-Year Graded Course, after January 1, 1896.)

Fundamental Faculty.—Sesco Stewart, M.D., D.V.M., Professor of Principles and Practice of Medicine. Jno. Forbes, M.R.C.V.S., Professor of Surgery. Sidney L. Hunter, Professor of Materia Medica and Therapeutics. Wm. C. Barth, V.S., Professor of Obstetrics. Leon Rosenwold, M.D., Professor of Pathology. Claude C. Hamilton, M.D., Ph.G., Professor of Chemistry. Silas L. Brooking, M.D., D.V.S., Professor of Comparative Anatomy and Physiology. Junius H. Wattles, D.V.S., Professor of Anatomy, Lameness, Shoeing and Physical Diagnosis.

Fees.—Tuition, \$100 first and second year; matriculation, \$5, first year only; dissection, each year, \$10; chemistry, each year, \$10; graduation, \$10.

Address Junius H. Wattles, D.V.S., Secretary, 310 E. Twelfth St., Kansas City, Mo.

TWO-TERM SCHOOLS.

CHICAGO VETERINARY COLLEGE, 2537 and 2539 State St., Chicago, Ill.

Fundamental Faculty.—A. H. Baker, M.D.C., Professor of Theory and Practice of Veterinary Medicine, and of Principles and Practice of Veterinary Surgery and Obstetrics. Joseph Hughes, M.R.C.V.S., Professor of Veterinary Anatomy, Special and Comparative. Finley Ellingwood, M.D., Professor of Chemistry. Arthur R. Edwards, M.D., Professor of General Pathology and Microscopic Anatomy. G. S. Baker, D.V.S., Professor of Special and Comparative Physiology and Histology. E. L. Quitman, M.D.C., Professor of Materia Medica and Toxicology. M. R. Trumbower, D.V.S., Professor of Cattle Pathology and Meat and Milk Inspection.

Fees.—Tuition, \$140 first year, \$135 second year; graduation, \$10.

Address Joseph Hughes, M.R.C.V.S., Secretary, 2537 and 2539 State St., Chi., Ill.

OHIO VETERINARY COLLEGE, 14 and 16 Gano St., Cincinnati, O.

Fundamental Faculty.—Thomas King, D.V.S., Professor of Theory and Practice of Veterinary Medicine. Herman Boehme, D.V.S., Professor of Anatomy. Frederick Kebler, A.B., M.D., Professor of Pathology and Bacteriology. Wm. Dickore, A.M., Ph.D., Professor of Chemistry. J. Francis Jones, B.Sc., V.S., M.D., Professor of Materia Medica and Therapeutics. J. M. Shaller, M.D., Professor of Physiology. Louis P. Cook, D.V.S., Professor of Surgery. A. H. Logan, V.S., Professor of Obstetrics and Cattle Pathology.

Fees.—Tuition, \$60 each year; matriculation, first year only, \$5; graduation, \$10.
Address Thomas King, D.V.S., 14 and 16 Gano St., Cincinnati, Ohio.

ONTARIO VETERINARY COLLEGE, 40 to 46 Temperance St., Toronto, Canada.

Fundamental Faculty.—Andrew Smith, V.S., F.R.C.V.S., Professor of Diseases of Domestic Animals. J. Thorburn, M.D., Professor of Materia Medica. G. A. Peters, M.B., F.R.C.S., Professor of Animal Physiology. C. Gordon Richardson, F.G.S., Professor of Chemistry. J. T. Duncan, M.D., V.S., Professor of Anatomy. J. Caven, M.D., L.R.C.P., Professor of Pathology and Normal Histology. C. H. Sweetapple, Professor of Obstetrics and Diseases of Cattle.

Fees.—Tuition, \$60 each session; dissecting and registration, \$5 each year; graduation, \$10.

Address Andrew Smith, F.R.C.V.S., Principal, Toronto, Canada.

NATIONAL VETERINARY COLLEGE, New Jersey Ave. and O St., N.W., Wash., D.C.

Fundamental Faculty.—D. E. Salmon, D.V.M., H.A.R.C.V.S., Professor of Sanitary Medicine, Control and Eradication of Contagious Diseases and Meat Inspection. John Lockwood, D.V.S., Professor of Theory and Practice and Clinical Medicine. A. M. Farrington, B.Sc., B.V.A., Professor of Obstetrics and Zootechnics. Chas. F. Dawson, M.D., D.V.S., Professor of Physiology. J. W. Hodges, M.D., Professor of Materia Medica and Therapeutics. Veranus A. Moore, B.Sc., M.D., Professor of Pathology. F. L. Kilborne, B.V.S., Professor of Surgery. Edwin R. Hodge, M.D., Professor of Chemistry and Toxicology. Wm. P. Fink, D.V.S., Professor of Anatomy.

Fees.—Tuition and dissecting, \$110 each year; matriculation, first year only, \$5; graduation, \$10.

Address Charles F. Dawson, M.D., D.V.S., Secretary, New Jersey Ave. and O St., N.W., Washington, D. C.

UNITED STATES COLLEGE OF VETERINARY SURGEONS, 222 C St., N. W.,
Washington, D. C.

Fundamental Faculty.—C. Barnwell Robinson, V.S., Professor of Theory and Practice and Sanitary Medicine. Chas. H. Ford, D.V.S., Professor of Dental Surgery. R. Alexander Dunn, D.V.S., Professor of Materia Medica and Toxicology. Harry W. Acheson, D.V.S., Professor of Cattle Pathology and Obstetrics. J. H. Adamson, D.V.S., Professor of Anatomy. Chas. H. Emmons, M.D., Ph.D., Professor of Physiology and Histology. Wm. A. Herriek, Ph.D., Professor of Chemistry.

Fees.—Tuition, \$65 each session; matriculation, \$5 each session.

Address C. Barnwell Robinson, V.S., Dean, 222 C St., N.W., Washington, D.C.

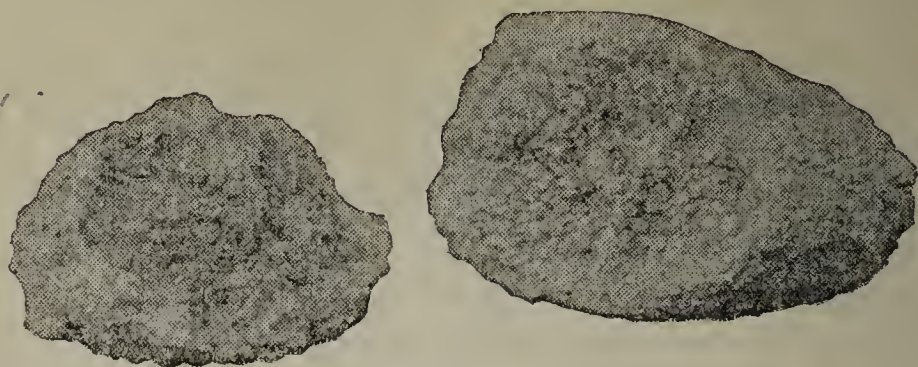
REPORTS OF CASES.

VESICAL CALCULUS.

By C. J. BRITTON, M.D.C.

The enclosed photo was taken of a cystic calculus removed from a thirteen-year-old sorrel gelding, used on our streets for many years as a family animal. The calculus was removed from the bladder on the 15th of this month (July), and on the

17th the horse was out on his usual round of driving. The



calculus weighed six ounces, and by examining the photo it can be seen that the rough edges caused considerable laceration.

HYDROCHLORIC ACID AND PEPSIN FOR NECROSIS.

By H. NEHER, D.V.S., Veterinarian to Metropolitan Street Railway Co., N. Y.

Subject, a large bay gelding, nine years old, sixteen hands high, weight 1700 pounds. Used for switching cars in depot. Got the right hind leg in the cable slot, between the hock and ankle; the tissues were torn to the bone on either side of canon; periosteum also torn away from bone. The slot had to be wedged open so as to draw the leg back far enough to an opening large enough to allow hoof to come out. I had him removed to my hospital, put in a large box stall, the bedding being very fine straw, so as not to hinder his movements while going around the stall. I applied carbolized cotton to the parts and wrapped them with a bandage, "not too tight," and left orders to have the part wet occasionally with water medicated with tinct. opii, which was done. In a few days I noticed the bone began to change color, the color running to a distinct margin, which, in time, exfoliated. I then thought I would use hydrochloric acid and pepsin, with the following result: I first took fifteen drops of acid to three ounces of water and sponged the parts thoroughly; waited fifteen or twenty minutes, then took the pepsin in proportion of fifteen grains to three ounces of water, injected the parts well, sponged thoroughly and wrapped up in cotton soaked in the the pepsin solution, and applied bandages. Continued this treatment for ten or twelve days; had the animal walked as

soon as fit. The parts healed splendidly, and to-day he is as strong as ever performing his work.

I will say the pepsin acts only on the diseased tissue by digesting it; has no action on the healthy tissue.

AMPUTATION OF RECTUM—COMPLETE RECOVERY.

BY THE SAME.

Subject, a bay mare, six years old, fifteen and one-half hands high, weight 1050 pounds. Used for drawing street cars. Taken lame, laid up from work, with orders to take away feed and use hay and bran mashes, as she was of very full habit. She recovered from lameness, exercised, and, while being exercised, was taken with azoturia; put in slings, but could not stand; taken out, placed in a very large box stall, well bedded, given a six drachm ball of aloes with two drachms of calomel, had hot blankets applied over loins, and given oatmeal gruel as a drink. Urine had to be taken from her, dark, nearly black. Had her turned every three hours. The next day she seemed easier, and in three days was on her feet, but very weak behind; but she persisted in standing and walking as best she could. I noticed on the fourth day her rectum was protruding, kept coming out until it was fully ten inches from the anus, hung down and completely covered the vulva. I tried reduction, it was of no use; put it back and out it would come. I concluded to amputate it. I prepared some strong, waxed, linen thread, and with a large needle stitched all around from the inside of the gut, *as it hung down*, to the edge of the anus, taking good, deep stitches in the skin; *at the edge of the anus* the stitches were interrupted, and left so I could tighten the next day. I was careful not to shut off the circulation entirely at first, but the next day I tightened them a little more and so on for four or five days, at the end of which time I amputated the gut close to the stitches, and the parts went back, stitches and all. I let the stitches go, did not take them out. The parts healed all right. Stitches all gone. Mare made a good recovery and is as fat and handy as ever, and doing her full work every day.

RUPTURE OF THE STOMACH.

By WM. V. LUSK, Veterinary Surgeon, 2d U. S. Cavalry, Fort Wingate, N. M.

A gray gelding (never known to be sick), eight years old, sixteen hands high, and used for cavalry purposes, was given his usual allowance of grain at 5 A.M., and watered and tied on the picket line at 6 A.M. About 10 A.M. he broke loose and began to run violently around the yard. In turning a corner he slipped and fell heavily to the ground. He was then caught and tied up, apparently none the worse for the fall. About two hours later he was found standing, with his head down, vomiting a mass of masticated food and showing signs of colicky pains. Pulse, temperature and respiration normal. After a careful examination the case was diagnosed as rupture of the stomach. He was placed in a box stall, and, for fear that the diagnosis might possibly be wrong, was treated for impaction of the stomach, which gave no relief. Temperature and pulse began to increase, and cold, clammy sweats broke out in patches over the body. Aconite was given to reduce temperature, with no beneficial result. Everything possible was done to relieve the animal's sufferings until about 10 P.M. the same day, when he expired under convulsions. The vomiting continued, at intervals, until about one hour before death.

Post mortem examination revealed a rent about ten inches long in the greater curvature of the stomach and parallel with it. The edges of the rupture were terribly inflamed and swollen. The stomach contained about one quart of masticated food and a small quantity of fluid. The gastric walls, except near the rupture, appeared perfectly healthy. About two quarts of the stomach's contents were found in the peritoneal cavity, where it had produced considerable inflammation in the parts with which it had come in contact. No tympany or bloating whatever was present.

In my opinion, this case goes to show that vomition can take place even after the gastric walls have ruptured.

LARGE OVARIAN TUMOR IN A MARE.

BY J. J. SMITH, D.V.S., Chambersburg, Pa.

The subject was a bay mare, which I was called to see on March 3d, and which was suffering from colicky pains, her abdomen being very much distended. Anodyne medication was valueless, and she died the following day. Post mortem examination revealed a large ovarian tumor, which was of the size of a bushel basket, though I could not obtain its weight on account of lack of facilities. It was cystic in nature and provided with numerous large blood vessels.

URINARY CALCULUS IN A MULE.

BY THE SAME.

On November 11th I was called to see a mule, which exhibited the symptoms of difficult urination, and which had been under treatment for about three days for kidney trouble.

Upon examination I found a large hard substance lodged in the urethra about half way between the bladder and the end of the penis, evidently a calculus. The animal was cast, the calculus cut down upon and removed, when it was found to be about two inches long by three quarters of an inch in diameter, very rough and of cinder-like appearance; a catheter was then introduced into the urethra and kept in place for two weeks, after which a solid sound was introduced once a day for a week. The wound received the ordinary antiseptic dressings, giving nitrate of potash in drinking water. The animal made a good recovery.

TRAUMATISM OF THE HEART.

BY THE SAME.

On August 3d I was called to see a cow belonging to Mr. George Storkes. The animal was showing symptoms of slight pain, pulse thready, temperature a little above normal, respiration normal, complete anorexia and every now and then emitting a moan. She received a dose of physic, with an opiate combined, and the next day appeared to be better;

the bowels were moving freely, and the appetite had improved, as she began to partake sparingly of her food. The next day I was again sent for, and found my patient much worse, and that night she died.

On post mortem examination the side of the heart presented an abcess about the size of a pint measure, filled with pus, and containing in its center a piece of wire six inches long and about as thick as an ordinary rib of an umbrella, bent for three quarters of an inch at a right angle. Its course could be traced by a black streak it had left, through the tissues along side of the œsophagus, through the diaphragm and coats of the stomach.

The peculiarity of the case is as to how it was possible for the wire to take the course it did with one end bent as described.

DYSTOKIA DUE TO UTERINE HERNIA.

BY THE SAME.

April 10th I was called to see a cow, the property of Mr. Joseph Jones, and found the animal in labor. Upon the right side was seen a large hernia, which, upon vaginal examination, the foetus in utero was found to have gravitated in that direction, and hence the diagnosis was made of a hysterocele, or uterine hernia.

Upon external manipulation it was found to be unreducible, owing to the smallness of the opening through the abdominal muscles, which was about three inches in diameter. The operation of gastro-hysterotomy was then decided upon; the animal received an ounce of chloral hydrate, and was cast on the left side. A vertical incision, about eight inches long, was then made through the skin and coats of the uterus, and the foetus removed, which, though small, was perfect. After the removal of the foetal membranes, the two edges of the uterus were sewed together and replaced into the abdominal cavity, after which the external opening was closed with sutures and dressed in the usual manner.

The animal made a good recovery and continued to milk for about a year and a half, at which time she was sold for beef.

SOCIETY MEETINGS.

PENNSYLVANIA STATE VETERINARY MEDICAL ASSOCIATION.

The semi-annual meeting was held at the Mountain House, Cresson Springs, Pa., Sept. 3d, 1895, and was called to order by President Pearson.

In the absence of the Recording Secretary, Dr. W. G. Benner, a motion was made that Dr. F. S. Allen, the Corresponding Secretary, act also as Recording Secretary, which was carried.

At roll-call the following members were found to be present: Drs. Helmer, Hart, Pearson, J. B. Raynor, T. B. Raynor, Noack, Timberman and Allen.

The minutes were read and approved, with the correction that a list of all the members dropped at the last meeting for non-payment of dues be added to the minutes.

There were three new members proposed for admission, as follows: Drs. Geo. W. Bell, Geo. B. Jobson and Daniel C. Gearhart.

In the absence of Dr. J. C. McNeil, of the Board of Censors, the President appointed Dr. Jacob Helmer to act with the Board, after which the meeting adjourned for fifteen minutes, while the Board considered the names of the applicants.

When the meeting was called to order, Dr. W. H. Hoskins, Chairman of the Board of Censors, reported favorably the names of Drs. Geo. W. Bell and D. C. Gearhart. The name of Dr. Geo. B. Jobson was laid over until the next meeting, with the request that Dr. Jobson be notified to appear at that time.

A motion was made that the report be accepted as made. Seconded and carried.

Motion was then made that the Secretary cast a ballot in favor of the two new applicants. Seconded and carried, and Drs. G. W. Bell and D. C. Gearhart were made members of the Association.

The report of the Corresponding Secretary was then read:

REPORT OF CORRESPONDING SECRETARY.

MR. PRESIDENT AND GENTLEMEN:—At the last annual meeting of this Association there were 126 members enrolled, and to this number were added six new members,

viz. : Drs. W. T. S. Wertz, H. J. McClellan, John F. Vandegrift, Edward L. Kellner, Charles Bland and E. E. Terry—making in all 129 active members and three honorary members.

At the close of the last meeting it was ordered by this Association that fourteen members be suspended for non-payment of dues, and that each member suspended be notified of the same, and, if possible, induced to remit the amount of his indebtedness. Your secretary has accordingly sent out bills twice during the past six months to the suspended members, and each time enclosed a letter urging each member to settle his account, and thus continue as a member of this Association; also assuring him that the Association regretted exceedingly the necessity of being obliged to take this step; but that it was but just and right that all members should join in defraying the necessary expenses of the Association. That the Association had been under a great expense during the past year in its efforts to secure the passage of two bills which have recently become laws. And, further, that no Association could continue to do good work without the necessary funds. To these appeals there has as yet been no response; thus the membership has been reduced to 115 active members,

Still there are many who should be suspended. Some have received their certificates and declined to respond to all notices sent out. There are also five certificates ready for delivery. Although not less than four notices have been sent out to each member during the past eight months, I have been unable to obtain a response. A certificate has been ordered for Dr. S. D. Larzelere, who became a member in March, 1893, and is in good standing, but has never received a certificate. Dr. Thompson has been notified that if he will remit the amount due, his certificate will be forwarded to his address. Dr. Samuel B. Willard has also been notified to send in his application and remit the amount due, and his certificate would be forwarded. Neither gentleman has responded, although twice notified.

Dr. Geo. B. Jobson was duly notified to appear before the Board of Censors, to which he promptly responded, giving a good and sufficient reason for not being able to be present, but furnishing a paper of his experience with "Abortion."

All new members have been duly notified that their certificates would be ready at this meeting, on their payment of initiation fee, etc. To all members of this Association two notices of this meeting were sent out. Bills have also been rendered to all the members, and to those in arrears for more than one year a letter was enclosed. Some few have responded.

Respectfully,

F. S. ALLEN, *Cor. Sec.*

A motion was made and seconded, that the report be accepted as read. Carried.

The President then appointed Dr. John R. Hart and F. S. Allen to examine the accounts of the Association.

The Treasurer, Dr. J. R. Hart, then made a statement as to the financial condition of the Association, showing a balance in the treasury, with a large amount outstanding against the members.

A discussion then ensued, in which nearly all present participated, as to the propriety of dropping all delinquent members. As a result of this discussion, Dr. Leonard Pearson

offered the following amendment to the Constitution and By-Laws:

AMENDMENT TO ARTICLE V, SECTION 2:

That the Recording Secretary shall keep an accurate record of the attendance of the members at all regular meetings, and after three successive absences the member shall be sent a copy of Article V, Section 2, and informed that the above section will be strictly enforced.

Motion seconded and carried.

A motion was made by Dr. J. R. Hart that all members in arrears for one or more years shall be notified that the claim against him will be placed in the hands of a collection agency, and if not paid within sixty days the Corresponding Secretary shall see that suit is entered and carried out. Carried.

Dr. Thomas B. Raynor made a motion that a committee be appointed to draft resolutions and forward the same to Mr. Wm. H. Woodring, of Northampton Co., Pa., to show our appreciation of his efficient, earnest and untiring service during the past winter in behalf of this Association by assisting the Legislative Committee in their efforts to secure the passage of the two bills presented by them to the last Legislature, and which are now laws of this State. Carried. The President appointed Drs. T. B. Raynor, Hart and Hoskins.

A motion was then made by Dr. Hoskins that a delegation be appointed to attend the United States Veterinary Medical Association at Des Moines, Ia., on September 10th, 11th and 12th, and the President appointed Drs. T. B. Raynor, Hart, J. B. Raynor, Helmer and Foelker.

The report of the Legislative Committee was next in order, and Dr. Hoskins, Chairman, reported as follows:

REPORT OF THE COMMITTEE ON LEGISLATION.

MR. PRESIDENT AND GENTLEMEN:—While I strongly importuned our President to place some other member at the head of the Legislative Committee for the present year, it was his wish that I should remain in the direction of this work until the legislation under consideration during the past two years should become fixed laws in our Commonwealth, and the promise that there was little left to be done led to my acceptance of this post of duty.

When we met in March last, at Philadelphia, the two acts which we had pressed so hard for consideration were in the last steps of their accomplishment, and as you all know they were finally adopted by both branches of the Legislature and subsequently received the Governor's approval, and are now fixed statutes of the State, but still in a very unsatisfactory and uncertain condition.

The act establishing a State Live Stock Sanitary Board, which was to have gone into effect on June 1st last, still slumbers, and we should endeavor to awaken by some means to-day the officials who are charged with its execution. But two of those who are to be members of this Board have received their appointment, and the one important position to our people generally—to us specially—still remains unnamed or appointed. While we had every reason to believe that the duties of this gravely important position would fall on the shoulders of our worthy President, and of whom it may be said with one accord, that to none would this position come in whom the veterinary profession the length and breadth of the State would feel more confidence and belief that through him the highest mission of this legislation for our people would be best accomplished. We have with one accord been sorely pained to realize that the exigencies of politics, the baneful perpetuation of the infamous “spoils system,” has robbed our State of his valuable services for the time, and our people of the defense and protection this Board promised to assure them and the profession in the Keystone State of the possession of a wise law, conservative plan and valued measure alongside our colleagues of other States in dealing with these portentous questions of so much import to the health and happiness of our people. We still hope and believe that our Governor will make this appointment, and thus bring to his administration in this specific direction the valued services of one so thoroughly equipped for this place, in my estimation, and through whom there will inure to his administration, the people and our profession, the greatest good to the greatest number, the true and highest attainment of all legislation for the people, of the people, and by the people.

The second act, establishing a State Board of Veterinary Medical Examiners, after some delay and slight changes, passed both Houses, and, receiving the Governor's signature, became a law. Its provisions called for its enforcement on September 2d, when was designated the time for the convening and organization of the Board. The appointments to this Board have also been denied us, for the reasons named applying to the office of State Veterinarian and the Live Stock Sanitary Board. May the lessons that these experiences teach us, that the day of offensive partizanship has reached such a climax that for the good interests of our people it must be wiped out as a blot upon our country and an insult to the intelligence of our people. We are a part of the people against whom these charges rest, and we are factors of influence and power in the better solution of these questions; let us, then, never lose the opportunity of so casting our ballot that we can be charged with wearing a party yoke, or of yielding our virtues and manliest traits of independence by conceding our party slavery, when we cast a ballot for a bad man, who, by the machinations of machine nominations or combine allotments, may have obtained a place on the ticket that stands for the party which best represents the principles we uphold.

These appointments should have been made many months ago, that the work charged to the execution of this law should have been complied with as intended by its provisions and our lawmakers. Our people are entitled to all the benefits of legislative enactments, and a long-suffering public arrived at exact conclusions when her unqualified support was given to these measures through the campaign of education instituted by this organization and completed through the earnest, conscientious work of all its members, directed and supported at all times and at all hours by the untiring energy and devotion of our President. Therefore the denial of these benefits and security to the people of our State comes to them as a condition of affairs for which the weakest excuse that intelligent officials may offer would be those of a partisan, factional, political character.

During the past six months several violations of the State law have been brought to our notice, and vigorous action upon the part of several of our veterinarians led

to summary action and relief from these parasites of the profession. In Allegheny County two traveling, peripatetic veterinary dentists squatted themselves for a time to gull an innocent, confiding public by their arrogance and charlatanism, when, through the efforts of Messrs. Waugh and Rechtenwald, under the direction of your committee, warrants were sworn out for their arrest. Through some weakness of the machinery for the execution of our laws, these fellows learned of the action against them, and suddenly left for new fields and pastures green. In Washington County, action was commenced against another veterinarian for practice without registration, and was settled by the imposition of a fine and the removal of the offender to other parts. A third case coming under our notice was the location in Reading of a veterinarian named McNeill, claiming to be a graduate of Harvard Veterinary Department, and the only veterinarian in Reading honored with membership in the United States Veterinary Medical Association. He had gone so far as to make a registry of these facts on the prothonotary record. Dr. Noack kindly reported the case with a newspaper comment of his talents, which was a tissue of falsehood and misstatements. Investigation was promptly made, and the courtesy of Prof. Osgood quickly armed us with all the necessary evidence, upon receipt of which I wrote him a very firm and emphatic letter as to the false statements he had entered upon the county register, and that if the same was not corrected within forty-eight hours from the receipt of my letter prosecution would be commenced, whereat he disappeared promptly and failed to leave his new post-office address.

Such is, in brief, a few points of action relating to legislation during the past six months, and with such vigorous action in the enforcement of our new laws we soon would find that no State in our country was more highly blessed in the attainment of wise and just laws, all tending to a higher and better condition of affairs, a more exalted standard for our profession, a higher recognition of its importance to the well-being of every community, and a more generously conceded support and sustenance of our profession, than Pennsylvania.

Respectfully submitted,

W. HORACE HOSKINS, *Chairman.*

On motion, report was accepted.

Dr. M. E. Conard, Chairman of the Committee on Sanitary Science and Police, being unable to attend, placed his report in the hands of the President, and was as follows:

REPORT OF COMMITTEE ON SANITARY SCIENCE AND POLICE.

To the Members of the Pennsylvania State Veterinary Medical Association:

We, the members of the Committee on Sanitary Science and Police, beg to make the following report:

Since our last annual meeting (March 3, 1895) there has been an unusually small amount of disease of a contagious character reported to me, and likewise to my fellow committeemen. In the early part of the year, as you all know, there was legislative steps taken toward the inspection of live stock—with compensation for those animals diseased—on account of the presence of contagious diseases. The appointment of the officials necessary to the enforcement of this very just and valuable law has been deferred beyond the time when it was generally looked for, by the political contest just now passed. These conditions, I believe, have had the tendency, at least in my locality, to suppress the information necessary to a full report of our subject. If this be the case, as I believe it is, we should be enabled to give a much fuller report at our next annual meeting in March, 1896. But by the kindness of Dr. Bridge and others of the committee I am enabled to make the following report:

During the past six months there have been forty-one outbreaks of glanders reported, in which sixty-four horses and mules were affected, fifty-nine of which have been destroyed, and fifty-one have been paid for by the State at an average of \$16.00 per head:

Several herds of cattle afflicted with tuberculosis have been inspected and tested with tuberculine, the diseased members destroyed and paid for by the State. This, however, has only been done where herds were badly affected, and their products were sold in large cities.

There have been three outbreaks of anthrax in herds numbering 220 head of cattle, of which 95 have died.

One new outbreak of *foot-rot* in a flock of Dorset sheep has been reported. The affected ones have all been killed and the others thoroughly disinfected, and it is believed to be stopped.

The flock of Dorset sheep reported at our last meeting as affected with *foot-rot* have been almost all killed for mutton, leaving only those that are surely free from the disease.

Also six outbreaks of Texas fever, with a fatality of twenty-eight cattle out of seventy head exposed. All cattle from localities known or believed to be infected with the Texas tick should be subjected to a thorough disinfection before being allowed to come in contact with susceptible herds. Perhaps a strong solution of creolin might do, but it should be something that would surely kill all ticks on them.

In addition, we have all had our outbreaks of influenza, distemper, strangles, etc., incidental to the season during which so many horses are shipped from the West.

Hoping this very meagre report may at least answer for an apology in my absence, I am, very truly yours,

M. E. CONARD, *Chairman*.

There was no report from the Committee on Intelligence and Education, on account of sickness in the family of the Chairman, Dr. Adams.

A lengthy discussion then ensued, in which nearly all present participated, in regard to the long-deferred appointment of the State veterinarian.

Dr. Hoskins then suggested that Dr. Hart be appointed or asked to wait upon the Governor to solicit and look after appointment of the State veterinarian.

A motion was then made to adjourn until two o'clock P.M. Carried.

AFTERNOON SESSION.

Meeting called to order at two o'clock.

Dr. Hoskins made extended remarks as to the health of Dr. S. E. Weber, of Lancaster, Pa., stating that he was in a serious and critical condition, and asked that a fund be raised by the members of this Association to assist him, and to show our appreciation of this most honored, esteemed and worthy member. The collection was started by Dr. Hart, to which all present promptly responded.

The reading of the papers was next in order.*

In the absence of Dr. James Waugh, his paper on "Paracentesis Abdominalis" was read by the Secretary.

Dr. Otto Noack then read a paper entitled "Trichinosis."

Dr. Jacob Helmer also read a lengthy paper on "Physical Diagnosis."

In the absence of Dr. Charles Bland, his paper entitled "Tips in Shoeing" was also read by the Secretary.

Dr. S. J. J. Harger forwarded a paper on "Serum Therapeutics," which was listened to with marked attention.

The meeting was then adjourned, and the members left on the 8:12 P.M. train for Philadelphia.

Respectfully, F. S. ALLEN, *Acting Secretary*.

CORRESPONDENCE.

PROFESSIONAL ETHICS vs. BUSINESS METHODS.

BALTIMORE, Aug. 15, 1895.

Editor American Veterinary Review:

Referring to July number of the AMERICAN VETERINARY REVIEW, page 231, under the heading of "Sundries and Items," I would like to state that as far as upholding the profession of veterinary, that I have done more for the profession practically than any one man in the State of Maryland, having had in the neighborhood of forty students with me, and also many graduates from first-class colleges have come to me after leaving college to obtain a practical knowledge and to perfect themselves before starting out alone, and which they are willing and ready to attest to. My plant is considered the finest in the country, as parties from all over the United States have visited my City Hospital and Country Sanitarium, and pronounced it the finest they ever saw, and have taken pattern therefrom and built after them.

There are many who envy my success in the profession, being much younger than a great many in the profession, or while they have been standing still I have been going

* The crowded condition of our columns will not permit of the publication of these papers in this number, but most of them will appear in the November REVIEW.
-ED.

forward. They have even gone so far as to visit my patrons with whom I have contracts by the year, and offered to attend their stock for much less than the amount they were paying me, and then again, others who have just left college, and with no experience or expense, having an office in some livery stable where they attend the stock for their office rent, and are glad to get a patient if it will only pay enough to buy cigarettes; and then again, we have a Certificate Law in the State of Maryland, with a board of examiners from U. S. Veterinary Medical Association, who are allowed to manufacture veterinarians out of hostlers, stable bosses, wheelwrights, blacksmiths and horse-shoers, providing the hostlers, etc., have the \$10.00 to pay for the certificate.

Owing to my extensive plants both in the city and country, and which aggregate about eighty-five thousand dollars, it would be foolish for me to think that I should sit in my office and let my interests go to destruction to satisfy my enemies; and as this is an age of advancement, I decided to issue the circular (which has called for the criticism in the July number of the REVIEW), sending it to the owners and breeders of horses and to all my patrons. If there is anything unprofessional in that, then I plead guilty, as it is a business matter with me as well as a profession.

Now, if any of my professional brothers, knowing what I have to contend with, can suggest another honorable way to pay my expenses and keep up my extensive establishment, please let me hear from them.

Respectfully yours,

DR. THOS. WM. SPRANKLIN.

NEWS SUMMARY.

ANTHRAX IN NEW JERSEY.—The editor of the veterinary department of the *Turf, Field and Farm*, a Jerseyman, replies as follows to the inquiry of a subscriber regarding the prevalence of anthrax in New Jersey: "That anthrax does exist in the western part of the State there is little doubt, but to the extent that rumor claims for it we are doubtful. We

must not forget that in all outbreaks of this nature the rule is to exaggerate and magnify the dangers. So far as we have been able to learn there has been and no doubt are still a few isolated cases of the malady, and, fortunately, of a mild character, with but little disposition to spread, and that it is likely to be transmitted to other animals we can scarcely believe. This statement, however, may be opposed by other views, notwithstanding it is a well established fact that horses are often found in stables with cattle seriously afflicted with anthrax, and where the mortality assumes a high rate, without being inconvenienced. We have noted this in a number of cases and believe it may be attributed to the fact that bovine anthrax, or what is better known as splenic apoplexia, is due to a form of bacilli different from that which affects the equine. The only remedy for this malady is isolation and vaccination; the latter no doubt is very efficacious, and we would not only recommend but urge upon all who may be afflicted by the trouble to procure the services of a veterinarian and have the entire herd, with others in the immediate vicinity, vaccinated."

TEXAS FEVER IN THE SOUTHERN STATES.—A telegram from Louisville states that a proclamation has been issued by the Kentucky State Board of Health quarantining against cattle from Virginia, North and South Carolina, Mississippi, Indian Territory, Alabama, Texas, Louisiana, Arkansas, Georgia and Florida, giving as a reason for this action that Texas fever has been introduced into these States recently and a number of cattle have died of it. The quarantine is to be maintained during all the year except December, January and February.

A REPRESENTATIVE OF THE UNIVERSITY REGENTS IN NEW YORK CITY.—The Regents of the University of the State of New York, in response to urgent requests, have decided to open an office in New York City for the accommodation of the immense amount of business which comes from here. The office will be at 10 East Forty-second street, and will be open after September 10, 1895, during the school week, from 9 A. M. to 4 P. M., and 7 to 9 P. M. Business hours will be from 9. A. M. to 12 M., but the deputy, Mr. Aza O.

Gallup, will see callers at other hours if they cannot come between 9 and 12. The representative of the Regents will have all publications, blanks and necessary records for the accommodation of law, medical, dental and veterinary students, and for all the professional, academic and higher examinations conducted by the University.

EXCHANGES, ETC., RECEIVED.

FOREIGN.

German.—Berliner Thierärztliche Wochenschrift. Thiermedizinische Vorträge. Therapeutisches Handbuch von Engen Bass. Berichtueber das Veterinärwesen un Königreich Sachsen für das fahr 1894. Oesterreichische Monatsschrift für Thierheilkunde. Schweizer Archiv für Thierheilkunde. Topographische Anatomie der Körperhöhlendes Rindes. Zeitschrift der Veterinärkunde für Rossärzte der Armee.

French.—Bulletin de Médecine et de Pharmacie de Burggraeve. La Presse Vétérinaire. Le Progrès Vétérinaire. Revue des Sciences Médicales. Annales d'Oculistique.

English.—Veterinary Record. Veterinary Journal.

Italian.—La Clinica Veterinaria. Giornale di Medicina Veterinaria Practica.

HOME JOURNALS.

Medical Record. Medical Review. Medical Journal. Modern Medicine. Medical Brief. Journal Comparative Medicine and Veterinary Archives. Therapeutic Gazette. Farm and Home. The Horseman. American Agriculturist. Breeders' Gazette. Our Animal Friends. Spirit of the Times. Turf, Field and Farm. Michigan Farmer. Wisconsin Agriculturist. American Cultivator. National Stockman and Farmer. Veterinary Magazine. American Horse Breeder and Farmer.

PAMPHLETS, CATALOGUES AND BOOKS.

Bulletin Experiment Station—Anthrax and Anthracoid Diseases—U. S. Department of Agriculture. The World's Markets. Annals of Surgery. State Library Bulletin No. 3 of N. Y. Libraries. State Library Bibliography No. 1. Modern Urethroscopy and Cystoscopy. Catheterization of the Ureters and Intravesical Removal of Tumors. Reports of Cases of Amputation of Omentum in Hernia Operations. Iowa Health Bulletin. Report from War Department.

COMMUNICATIONS.

Dr. C. Cresswell. W. L. Williams. O. Faust. O. Schwarzkopf. J. W. Adams. W. H. Hoskins. N. P. Hinkley. L. Pearson. Prof. J. Law. M. R. Trumbower. F. H. Kilborne. J. P. Lowe. W. L. Rhoads. J. H. Reynolds. Geo. C. Faville. J. Parker.

AMERICAN VETERINARY REVIEW.

NOVEMBER, 1895.

EDITORIAL.

LOUIS PASTEUR.

The sad event of the death of the great French chemist took place in the latter part of September, at Villeneuve l'Etang, after a long sickness. A few days previous to his death, it had been made public that a new attack of his former ailment had made its appearance, and his numerous friends began to fear that the end was slowly approaching, a feeling which was, unfortunately, too soon realized.

It is not only a French savant, one of the glories of the French nation, who has disappeared, it is a benefactor of humanity. Both the Old and the New World will mourn Pasteur's death as sincerely as France herself, as there is not a country, no matter how far it may be, that has not benefited in some degree by the discoveries made by this great man—and this universal acknowledgement will be so much more merited that the work of Pasteur is only the starting point of a new era in medical science, which is bound to develop, to increase for the greatest glory of the present century and the relief of humanity.

Almost every branch of science has profited by the work of Pasteur, and if among them human medicine stands at the head, her sister (veterinary medicine) can never overlook the benefits that she has derived and will derive in the future by the application of the discoveries of Pasteur.

If veterinarians will bear in mind the progresses made through these discoveries in the investigations and therapeutics of such diseases of our domestic animals as anthrax, hog cholera, chicken cholera, rabies, etc., these will always bring forward to them the name of Pasteur and place it as one of the most honored of veterinary scientists. The presence of many veterinarians, the representatives of the French veterinary schools among the numerous attendants which followed the funeral of Pasteur are evidences of the appreciation of French veterinary medicine of the value of the work done by him.

NOT AN AMERICAN CITIZEN.—“On the contrary, can the REVIEW deny that one of its editors, *not an American citizen*, did not use endeavors to interfere with the recent legislation at Albany.”

Such are the expressions published in the September issue of the *Journal of Comparative Medicine and Veterinary Archives*.

This is such an erroneous imputation that I feel it a duty to myself and my past professional life to most emphatically deny it.

At the first congress of veterinarians, held in Chicago, in a paper that I presented there, I urged, in a national point of view, almost all that is contained in the law recently passed in Albany (see A. V. R., Volume XVII, Pages 594 and following).

Later on, at a meeting of the New York State Veterinary Medical Society, I said:

“The creation of a board of examiners is a matter that I cannot too strongly indorse. I have on previous occasions, and in various papers, pointed out the importance I attach to the existence of such a board, and if I erred in calling for a national board, overlooking, as I did, the difficulties that exist in the creation of such a body through the fact of State rights, I am perfectly satisfied to see the plan started to-day in each individual State, until the moment has come when the importance of the veterinary profession will have been proved so powerfully as the guardian of our national agricultural wealth, the Federal government will then take hold of it in the proper way and make it one of its national institutions, as it is in the old world.

“The conditions of admission to examination before the State board form the most interesting part, however, of the bill to the future veterinarian and to the existing places of education.

Section 176 of the bill reads:

The Regents shall admit to examination any candidate who is more than twenty-one years of age, of good moral *character*, *has the general education required in all cases after July 1, 1896, preliminary to receiving a degree in veterinary medicine, not less than three full years*, and has received a degree as veterinarian from *some registered* veterinary school.

“Those requirements read all that we have been asking for, in fact all that which imposes itself upon veterinarians and upon veterinary schools of repute, that which must necessarily be carried out all through the country in a very short time.

"It means for us a perfect indorsement of our remarks and of our propositions made in Chicago before the members of the first veterinary congress of America held last year. It means all obligations for every one who shall intend to practice in *this State*, to obtain certificate of qualifications and of registration; it means no more imposition on the part of the easily obtained graduation from any school from any part of the world, it means death to quackery, it means the elevation of the veterinary profession to its proper pedestal."

With such a past behind me, I will ask, if, with the exception of the anonymous person who wrote the article for the *Journal of Comparative Medicine and Veterinary Archives*, after my well known exertions of thirty years in behalf of the elevation of veterinary science in the United States, there is one veterinarian in the country who would accuse me of such action as that referred to?

I am not a politician—I have no friends in legislative halls—I have no one to pull wires *pro* nor *con* upon any legislative measures—I am only a veterinarian who has devoted his life to the veterinary profession in the United States—but it is true I am *not an American citizen*.

My anonymous critic seems to have forgotten that science has no country, no *patrie*, though scientists may have.

In conclusion, I will say that I feel proud of the passage of the law, and claim that instead of interfering with it I was one of the first to cause its enactment.

A. LIAUTARD, M.D., V.M.

A PROTESTATION.

PARIS, August 1, 1895.

Prof. Olof Schwarzkopf, V.M.D., Chairman of Executive Committee, Association of Veterinary Faculties of North America:

DEAR SIR:—I have received your letter of July the 13th, with the programme of the next meeting of the "self-named" "Association of Veterinary Faculties of North America," doing me the high honor of "either approving, altering or suggesting, as I may see fit." I thank you for the compliment, and though I know well that I am pleading for a lost cause, and that it is simply . . . foolish for me to hope that my efforts to carry their point, notwithstanding these expectations, I will permit myself to take advantage of your invitation, not to approve, alter or suggest the programme, but simply to call *your* attention, that of the *members* of the Association of Veterinary Faculties of North America, and, above all, that of *every*

member of the United States Veterinary Medical Association who has at heart the name of the Association, her reputation and her welfare, to only one point—that is, to the

UNCONSTITUTIONALITY OF YOUR ACTIONS,

and if I am not going to approve, alter or suggest on the programme, what I intend to do is to ask you to stop where you are, Mr. Chairman, and to tell you and your colleagues of the Association of Veterinary Faculties of North America :

Stop ! or, rather, begin over again !

Yes, *stop*, because you are illegal !

Yes, *begin over again*, because the work that you may do, the subjects that you may consider, the laws or regulations that you may enact, will all be thrown away uselessly, because it cannot be entertained ; because, remaining a dead letter, it will do no good to the noble work you intend to do, no good to the great reform that you will attempt to bring out ; because in this land of liberty arbitral actions are illegal ; and because, if your existence may serve personalities, it will do no good to American veterinary medicine.

What you may say is, “ Is it Dr. Liautard who speaks thus ? ” “ Is it he, who, at the first Veterinary Congress of America, expected what he had on previous occasions urged in his paper on ‘ Veterinary Education ; As It Was, As It Is, and As It Should Be ? ’ ” “ Is it he, who, before the New York State Veterinary Medical Society, presented an address to the same effect ? ” “ Is it he who tells us to stop when we are about considering the reforms which he has so urgently asked of us, and which, should they be brought to effect, would crown his professional work in behalf of veterinary medicine with the most glorious reward ? ”

Yes, it is I ! and why ?

Mr. Chairman, let me ask a single question : *By what authority does the “ self-named ” Association of Veterinary Faculties exist ?*

It may be answered, by direction of that great Association for which we all work, by that great body of veterinarians who for years have endeavored to elevate the profession, and have succeeded. Right ! I grant that it became a duty for the United States Veterinary Medical Association to ask the formation of the Association of Veterinary Faculties of North America, which I have myself asked for, and which I ask for again.

But—and here are my objections to her existence, to her right of existence, to her legality—and, if I am right, I say and I repeat : *Stop where you are and begin over again.*

That which I am now going to say I wanted to say last year at the meeting at Philadelphia. Landed but just a few hours from a trip across the Atlantic, and finding my inability to be at the meeting before action was taken on the report and discussion on the new-born society, I had telegraphed to my friend, Prof. Robertson, to ask for a short recess, a brief delay, to allow me to arrive from New York. This request was denied, and I just entered the room to hear that the child was born—a *child doomed to death from its birth*. What I wanted to say at the meeting I told you, Mr. Chairman, in Philadelphia, and my remarks at that time you seemed to approve.

What were these remarks ? They were imbedded in the following words, or

about, viz. : "*That the Association of Veterinary Faculties of North America was not properly organized; that the fact of a FEW persons engaged in teaching in SOME of the veterinary colleges of North America being asked to unite for the purpose of organizing, had no value; that the only proper way to have the organization possessed of a solid standing was to have the OFFICERS of the colleges notified of the project in view, and they to delegate professors from their faculties to represent each individual college.* Speaking of *officers* of a college, I do not mean the teachers, the professors, nor the dean, nor the principal. I mean the *board of directors*, the *board of trustees*, the *GUARDIANS* of the charter, which is the life of a school.

WAS THIS DONE? If it was not, I say it again, *Stop and begin over again!*

You know, Mr. Chairman, it was not done.

Instead of that which, in my humble estimation, ought to have been done, what did take place?

With, perhaps, some slight errors of no value, I know it was thus: NOTICES were sent to SOME, to very few, not to all, *not to every member of SOME* faculties.

Was this correct? Why to a few only? Were these few the masters of all? Why should they be invited to assume certain powers, when only those who had that power did not delegate them to assume it?

These notices mentioned the intention to have a meeting to organize at the annual gathering at Philadelphia. Some were present, others were absent (I, unfortunately, among those). The organization took place, officers were elected, and, as I said, the *child was born in a hurry, a premature delivery*. Afterwards notices were sent to those who had been elected members of the Association; they were placed on various committees, and to-day you prepare, yourself, the second act of that which, should not the subject be so important, and should I not fear to indulge in personalities, I would call a *farce, a comedy*.

Of what value can be the decision resulting from the discussion of the subjects on "Prescribed Entrance Examination;" on "State Boards of Veterinary Examiners and their relation to Veterinary Colleges;" on "Uniform Degrees;" on "Competitive Examinations for Veterinary Faculties," with an amalgam like that which composes your organization, viz. :

1st. *Representatives, mostly all, without sanction, authority or power to represent.*

2d. *Representatives of two and three year schools.*

3d. *Representatives of private institutions and of colleges attached to universities, as departments; and*

4th. In the presence of schools which exist now and are not represented in your Association of *faculties*, and, still more, who are not represented in the mother national body.

Mr. Chairman, the work that lies before you seems to me very simple, and can be performed at once, without anyone fearing that his pride has lost any of its right.

You recognize your illegal organization, and state so to the Association. You ask power to continue your work as a committee, not as an association, and then *begin over again* in obtaining your OFFICIAL appointment from the trustees and directors of the various places where veterinary education is carried out. You can then reorganize later on, and be prepared to enter into the performance of your work "*as it should be,*" and with the certainty of receiving the approval and support of every member of the profession.

Mr. Chairman, I am miles away from Des Moines. On account of unavoidable circumstances, I am once more unable to be at the meeting of the National Society, and must trust to writing that which I fear can scarcely be communicated, as it should be, except by *one fully convinced*. Have I succeeded in giving you, or any of your colleagues, *that conviction*? I hope I have. And, if such is the case, I shall be grateful to all of you to have listened, not to my words, but to the laws of rightfulness and equity; and, if you permit me, I will then renew my efforts, offer my services for the cause in question—the elevation, the perfecting of education in *American Veterinary Institutions*.

Yours truly,

A. LIAUTARD, M.D., V.M.

The above speaks for itself. It will be seen from it that the writer has never made the attempt to prevent the work nor the stay of the association referred to.

The reasons laid down by him may not be correct, he may be in error, but he has the firm belief that he is not—a belief based upon personal verbal assurances. That the Association of Veterinary Faculties of North America “has come to stay” he certainly hopes; that “it will grow stronger day by day” he also believes; that it “will outlive the charges and attacks and calumnies of any one man” he doubts not, as he does not know of any one who wishes its death; that “it will not stop, nor dissolve, nor begin over again,” he does regret. If his remarks were correct, he is quite certain that the *reclame* which has been made for her in a pretentious and bombastic manner by a critic of the protestation, has missed his objects, overreached himself, and by its tone prevents any further consideration at our hands. The motives of the protestation were good, and if they were erroneous, they were not ridicule—they certainly were not valueless (by the written acknowledgement of several), and, as such, at least ought to have received a gentlemanly consideration.

PENNSYLVANIA STATE BOARD OF VETERINARY EXAMINERS.—Dr. W. L. Rhoads, of Lansdowne, Pa., writes us that the Governor has made the following appointments on the State Board of Veterinary Medical Examiners: for three years, W. H. Hoskins, S. J. J. Harger; for two years, J. C. McNeil, Harry Walters; for one year, J. W. Sallade. They have not, as yet, received their official notice, but it is understood this is to be the board.

ORIGINAL ARTICLES.

THE THERAPEUTICS OF COLIC.

BY W. L. WILLIAMS, Veterinarian to the Agricultural Experiment Station,
Bozeman, Montana.

Paper read before the United States Veterinary Medical Association.

The term colic has been made to include a variety of diseases of the abdominal organs due to widely dissimilar causes and possessing but one common character, that of abdominal pain, having its origin in some portion of the digestive canal.

This grouping of a number of diseases under one term is partly necessary because many of them cannot be clearly differentiated during life, although each have characteristics in a measure peculiar to themselves which may lead to a probable or even positive diagnosis.

Statistics indicate that ten to twenty per cent. of horses affected with colic die, and that forty per cent. of the deaths of horses are due to this affection. These statistics appear to be largely from city districts, hence apply to work horses. In breeding districts these figures are probably entirely too high.

The difficulty of safely identifying the various diseases of this group tends unconsciously to lead to the empirical treatment of the entire group by a common formula, regardless of specific indications offered by each individual case. Under these conditions we find the treatment of colic unsatisfactory.

The Munich Veterinary School (Friedberger & Frohner Lehrbuch d. Spec. Path. u. Therap. Vol. I, P. 162), has shown that an apparently greater per cent. of colic cases recover without than with medication. Have we not permitted empiricism to displace rational medicine to an unjustifiable degree?

The conclusions of the Munich Veterinary School are applicable to several veterinary colleges in our country and to the practice of many veterinarians.

During my first years in practice, when I followed trust-

ingly the methods dictated by authors and teachers, my losses from colic were appalling, costing me many anxious hours and valued patrons, but as necessity and reason drove me farther and farther from what I thought classic methods and taught me a higher appreciation of nature's powers and her abhorrence of unnecessary meddling in disease, my losses became very much less.

If we are to handle colic without violence to natural methods we must apply to it greater knowledge and judgment than to any other internal malady. The confusion in its treatment is shown by the endless number of remedial agents used without any apparent order. One will have the patient lie, another stand, another walk, or trot or run.

One relies on anæsthetics, another on sedatives, another on stimulants or carminatives, another upon astringents, and others upon laxatives or purgatives. Not a few combine several or many of them in inextricable confusion, or give together two diametrically opposed drugs, as, opium with oil, or aloes, in such proportions as to partly or wholly counteract each other.

Among the diseases grouped under the common head of colic, because not always distinguishable from each other, we must recognize for therapeutic reasons, numerous pathological conditions due to various causes among which are :

1. Dietetic colic:
 - a* Overfeeding colic. *b* Colic due to damaged or improperly prepared food. *c* Starvation colic.
2. Obstruction colic:
 - a* Impaction colic, including the impaction of dry, woody food in the large intestines of adults, the retained meconium or ingested straw or hay of young foals, and the gummy feces occasionally seen in horses at pasture on green grass. *b* Mechanical obstruction. (1) Volvulus. (2) Intussusception. (3) Herniæ. (4) Tumors.
3. Colic due to paralysis of the intestines.
4. Colic due to the interruption of the gastro-intestinal blood supply. *a* Thrombosis. *b* Embolism.
5. Reflex nervous colic due to exposure, fatigue and other causes—spasmodic colic.

6. Colic due to external mechanical pressure, or to abnormal position of the body.
7. Worm colic.
8. Colic due to foreign bodies in the intestinal canal. *a* Calculi. *b* Sand or dirt.

The application of rational therapeutics to this group of pathological conditions renders it necessary that our first law shall be to rigidly avoid the use of any medical agency which would tend to aggravate any pathological condition present, whether recognizable or not; or to pursue, as far as possible, an expectant line of treatment.

In the colic of overfeeding, with its history we have no cause to suspect any obstruction, but have to deal with an overloaded gastro-intestinal canal, the contents being moist, soft, and tending to rapid decomposition with the formation of large quantities of gases, with the consequent dangers of gastro-intestinal ruptures, suffocation, intestinal paralysis, gaseous poisoning, and other untoward results.

The chief and most urgent element of danger is the gaseous accumulations, from which relief should be given as promptly as practicable for many reasons:

1st. To avoid rupture of the stomach, intestines or diaphragm. 2d. To prevent suffocation. 3d. To prevent toxic effects from the absorption of gases. 4th. To permit normal peristalsis and avoid gastro-intestinal paralysis. 5th. To relieve pain. 6th. To prevent intestinal displacement.

The use of the trocar for relieving gaseous distention is so prompt, efficacious and safe, that no apology is necessary for mentioning this method almost alone. In order to fully accomplish all the purposes indicated above, the use of the trocar is demanded as early as any appreciable degree of tympany is present, and its repetition as often as like conditions return.

The gaseous accumulations are generally most pronounced in the large colon, and cæcum, and we usually aim to enter these with the trocar. The point usually selected for the operation is the highest part of the right flank, in which position, if the animal be standing, the gas is most free from admixture with food and consequently flows most freely through

the canula. If the patient is lying down the intestines are quite probably displaced somewhat, but most likely the most distended intestine occupies the highest point of the abdominal cavity, whether that be the middle or lower region of the flank, right or left side.

There has been an endless variety of trocars invented, the simplest being distinctly the best. The caliber of the trocar usually kept for sale is too great, being one-eighth inch in diameter or more, while three thirty-seconds of an inch is ample and adds to safety by decreasing the area of the wound about one-half. This reduction in size necessitates the use of the best of steel, well tempered so it will not bend. The point of the trocar should be far more tapering, the sharp part being two to three times as long as in those generally offered, and delicately sharpened so that its use occasions an incised and not a punctured wound. The canula should fit the trocar closely and perfectly, leaving no space between them, and the end of the canula should be well rounded and smooth so that no foreign matter can be lodged between the end of it and the trocar and carried into the tissues, or the peritoneum or intestine caught and pushed along before the canula. The trocar should be fastened immovably in the handle. Reversible trocars cannot be kept in order, their points always being dulled by contact with the handle when reversed.

If the instrument is to be carried in the pocket it should be supplied with an appropriate case. A very serious defect in the construction of most reversible instruments is the making of the trocar too short for the canula, so that when used the set-screw fails to hold it in place, allowing it to push back into the handle so far that the point is partly hidden within the canula, allowing the end of the latter to tear and abrade the tissues, marring or wholly preventing a successful operation. The minimum net length of canula should be six inches and even this will be found short for very fat, heavy draft horses. If too short the gut slips off the end very readily either from peristaltic movement or collapse of the engaged portion. Besides, it may be necessary to pass through one intestine and enter another part. Before using,

the trocar should be carefully sterilized, and, when practicable, that part to be selected for the operation should also be cleansed, although this is not generally so important, for if the trocar be properly made, as described, it cannot well drag foreign matter far into the tissues. The incision of the skin at the point of operation by means of a lancet, is unsurgical, producing a larger and more open wound than that caused by the trocar through which infection may the more readily occur. The skin serves as an important bulwark against septic infection and should be left as nearly intact as practicable, which is best done by using the small trocar with its sharp, well tapered point, which cuts like a lancet and leaves when withdrawn a wound almost undiscoverable. The trocar should be held loosely in one hand, and perpendicular to the abdominal walls, and its insertion accomplished by a quick stroke with the palm of the other hand, driving it to its desired depth at a single blow. The trocar is then withdrawn and the canula is retained in position with the hand, being careful to prevent its dislodgment from the intestine by peristaltic action. After the gas has escaped, the trocar should be reinserted into the canula so that on withdrawal the intestinal walls catch and wipe off any ingesta which might otherwise adhere to the mouth of the canula, and drop into the peritoneal cavity or lodge in the abdominal walls. More abscesses and septic inflammations are probably due to drawing septic material from the intestine and depositing it in the tissues, than are caused by the introduction of septic material from without. Should the escape of gas be unsatisfactory the depth of introduction may be varied by placing the trocar within the canula and pressing it forward or drawing it outward. Frequently it is found that a small amount of gas escapes from the intestine just punctured when it collapses, and the pressure of the other portions of the intestine is such that the portion encountered does not refill. In such a case the collapsed part of the bowel is to be passed through and the distended portion entered. If success is wanting on the right side there should be no hesitation in trying the left. Fatal sequelæ from the use of the trocar have been recorded,

but I have not observed them. In one case I produced peritonitis of a severe type, owing to too short a canula, from which the intestine repeatedly slipped and probably caused the lodgment of intestinal contents in the peritoneal cavity. In another case a very serious abscess took place in the abdominal walls, finally rupturing in the inguinal region. In this case the instrument was used in the dark, and the horse was thickly smeared with wet manure at the point of operation, the case being one of unusual urgency. Several times small abscesses have followed the use of the trocar, but they were insignificant and did not interfere with the daily work of the patient.

It has been suggested that when the stomach is the seat of considerable gaseous distension, as evinced by attempts at vomition and eructations of gas, it should be attempted to introduce the trocar into it, and it has been claimed that this operation has been successfully performed by the use of an extra long trocar, introduced at the usual point for entering the colon or cæcum, the practicability of the operation being explained upon the theory that when distended with gas the stomach turns on its longer axis and floats upwards.

But in autopsies which I have conducted after rupture of the stomach, that organ was found in its normal position and the position of its former contents in the peritoneal cavity indicated clearly that the relation of the stomach had been constant. It is rare, however, that the stomach requires direct relief from gaseous distension, as the gases are most frequently formed in the intestines and pass forward into the stomach, or being formed in the stomach pass readily backward through the intestine until the colon is reached.

The stomach does not rupture because the gas within it is under greater pressure than in any other parts of the alimentary canal, but because of the much greater surface upon which the gaseous pressure is exerted at the same rate per unit of surface. If the colon be relieved by the use of the trocar, the stomach is immediately relieved also in nearly all cases. At least I have not observed rupture of this organ in any case where the colon was kept free from gaseous accumu-

lations. Should emptying of the colon fail to relieve the gastric distension, the stomach tube may be found useful.

When the tympany has been relieved by the aid of the trocar the chief element of urgency has been overcome, and the pain and discomfort of the animal has been markedly alleviated, so the attendant has time to proceed deliberately and carefully. The patient should be made as comfortable as possible, a good, deep bed of straw provided, upon which, if it will lie down, it should be allowed to rest quietly. If very restless and not exhausted, slow walking sometimes allays the uneasiness and tends to hasten the evacuation of the bowels. The patient should be prevented from throwing itself violently on the ground. Hot fomentations, poultices, brisk rubbing, or the application of stimulating liniments to the abdominal walls may be of value. If the pain present demands it, the remedies to be administered should be so selected that while alleviating the pain they should not interfere with the normal secretion or peristaltic motion of the alimentary canal and that they should, as far as possible, check further decomposition of food and the consequent gaseous accumulations. Opium and morphine are both clearly contraindicated, as they serve to constipate and paralyze the bowels and augment the gaseous distension.

Turpentine, camphor, etc., relieve the pain fairly well, but are too prone to irritate. Carminatives, such as ginger, anise, peppermint, etc., exert a wholesome influence by stimulating the normal action of the bowels, especially when combined with alcohol or its derivatives, such as nitrous ether, these latter possessing in addition to their anti-spasmodic properties a distinctly antiferment action. Chloral hydrate claims here a very important place, being markedly antiseptic, yet anodyne in a high degree. Chloral has the disadvantage that after a full dose, especially in solution, it is dangerous to follow soon after with a drench, as the chloral so benumbs and anæsthetizes the throat and larynx that thereafter swallowing is imperfect and the medicine drops into the larynx and passes into the lungs, producing foreign-body pneumonia, more frequently, in my observation, acute lung apoplexy ending fatally

in one to a few hours. Some writers, among them Finlay Dun, state that chloral may be safely administered hypodermically, but some three exceedingly unfortunate attempts to use the drug in this way, in which extensive gangrene of the subcutaneous connective tissues ensued in each case, disabling the patient for several weeks, I became convinced that the drug was not usable in this manner. Again I have tried administering the drug in the dry form, wrapped in paper, but the paper may break in the mouth or fauces and cause painful excoriations, or may lodge in the œsophagus and cause inflammation of that organ, producing symptoms of choking. In one case I was called fifty miles in consultation, in a supposed case of choking, to find on my arrival that the œsophagus had been burned by the lodgment of a chloral pill. It is, therefore, best to give chloral in small, soft, tenacious pills, which will not readily break, cannot lodge in the œsophagus, and once in the stomach will quickly melt away.

An important question confronting the veterinarian is the action to be taken regarding the presence in the intestinal canal of the superabundance of food.

Generally purgatives are resorted to as the rational treatment indicated. But a careful study of the conditions presented and observation with the various methods of treatment demonstrate this to be erroneous.

The ordinary purgatives act too slowly in the horse so that ere purgation ensues the crisis has been safely passed, and if let alone the bowels will move gently, or undergo slight diarrhœa.

In these cases of over-feeding, with flatulence, the bowels have been distended, more or less paralyzed and usually irritated or inflamed. A full dose of aloes under these conditions means that it cannot act until the colic ceases, or rather until the time when naturally the colic should cease, when in the weakened state of the bowels the colicky pains are renewed by the drastic action of the aloes, and when the bowels finally respond, they do so violently, not infrequently ending in the death of the animal, quite commonly delaying the return of the horse to his accustomed duties for several days.

In other cases aloes remains in the system for a long time causing great depression, and in some cases fatal aloes poisoning, without showing any tendency to purgation. The bland oils, while doing little, if any, good in these cases, do comparatively little harm, but the already overloaded stomach can certainly profit but little by their introduction.

I have noted, also, that when oil has been given, and yet remains in the stomach, that in case of pills wrapped in paper entering it the wrappers become oiled and the pill is not dissolved for several hours.

In this way I have seen chloral pills repeated several times without effect until finally the oil has been absorbed and then the combined effects of several large doses of chloral were manifested all at once.

Other purgatives such as glauber salts, tartar emetic and calomel have been commended and are probably safer than aloes or oil, although their value may well be doubted.

More recently, pilocarpine and eserine have come into prominence as remedial agents in this affection and like most new remedies, have been much abused and have then tended to relapse into disuse.

If eserine has a place in veterinary medicine it is certainly in this disease. The food is generally soft, and needs only prompt peristaltic action to cause its expulsion from the alimentary canal, and this eserine can furnish. Friedberger and Frohner fear that in the over filled condition of the stomach and bowels the severe muscular contractions are likely to produce rupture. This would doubtless be true in case of mechanical obstruction, such as volvulus; of inflammation with consequent paralysis of a section of intestine; of impaction with hard dry food, or in the presence of great accumulations of gas. The mechanical obstructions we rarely suspect in cases where a clear history of overfeeding exists, the impaction with hard dry feces, rarely, if ever, occurs in these cases, the inflammation and paralysis of sections of the bowel usually takes place only after several hours duration of the disease, while the gaseous distension is subject to our control by surgical means. We therefore see no

direct danger in the use of eserine in the earlier stages of this affection, if the gaseous distension be first relieved by the use of the trocar. I think it better to give small, repeated doses of one-half to one grain rather than one large dose. More recently still our attention has been called by Prof. Dieckerhoff to the use of barium chloride as a purgative for the horse, and much is claimed for its promptness, efficacy and safety, although its advantage over eserine except in cost is not very clear. It must be constantly borne in mind that purgatives are unnecessary in this affection, and that unless their use be very judicious they do more harm than good. I long since abandoned almost wholly the use of purgatives in colic from overfeeding and can say that my success has been far better than under the usual regime. With the abandonment of purgatives, opium and morphine have, as already implied, also been discarded. If morphine is used, purgatives may be necessary to overcome its effects, but they are not essential in combatting the disease. I would then say if purgatives are to be given, use them only in the very early stages, in absence of great gaseous distension, and select preferably eserine. If purgatives have not been used, we frequently find after the crisis of the disease has passed, or even during the early stages, a more or less severe diarrhoea, which must not be checked but merely watched and controlled. Demulcent gruels, stimulants and carminatives will almost always suffice, and if the feces are very fetid, salol should be added.

In colic due to the ingestion of musty or otherwise unhealthy food, leading to its early decomposition within the alimentary canal, we generally find a degree of tympany which necessitates early and repeated use of the trocar; our efforts should next be directed towards staying the putrefaction of the intestinal contents, by the administration of antiseptics, antiferments, diffusible stimulants and carminatives. Salol, and possibly naphthaline, should prove highly useful during the disease and convalescence.

Opium is clearly contraindicated, as it serves only to stop the peristaltic action of the bowels and the secretion of

digestive fluids, thus encouraging the decomposition of the food which constitutes the essential factor in the disease. Hepatic stimulants, by increasing a flow of bile, stimulate healthy peristalsis and render the intestinal contents aseptic.

In the latter stages, frequently early in the disease, there is a marked tendency to diarrhœa which should be combated by demulcent gruels, carminatives and diffusible stimulants. In colic due to a prolonged deprivation of food we frequently find coincident fatigue. Opium and morphine are rarely, if ever, indicated, but rather carminatives and diffusible stimulants, such as aromatic spirits of ammonia, ginger, alcohol and nitrous ether, in the form of a drench in large volumes of warm water or gruel.

The patient should be kept as quiet and comfortable as possible. Heat applied to the abdomen by means of hot wet blankets may afford much relief. Purgatives are clearly inadmissible.

In the colic of impaction in adult horses due to the ingestion of food composed too largely of woody fibre, we are confronted with conditions requiring much time and not infrequently great tact to remove. There is plenty of time so we need not hasten. Purgatives are almost universally prescribed, but the very drastic members of the class are clearly contraindicated, such as croton oil, gamboge, eserine and pilocarpine, but we must rely rather upon those cathartics which will slowly and gently soften down and render pultaceous the accumulated dry mass, when little, if any, stimulation to the peristaltic action will accomplish its expulsion. The impaction generally occurs too far forward to render enemata of avail. Aloes serves the purpose fairly well, but large and repeated doses of the bland oils do better, and better still, perhaps, one moderate dose of aloes combined with oil, the latter to be repeated frequently. The formation of gases rarely occurs. The pain is seldom severe and calls for remedial treatment but rarely.

When relief from pain becomes necessary, aconite, belladonna or cannabis indica should be used, or, if used with great caution, morphine may be employed in doses of one-third to

one-half grain subcutaneously, as in these doses it is not constipating.

In newly born foals we frequently meet with obstinate colic, the result of retained meconium, or a little later, owing to the ingestion of hay or straw. In these cases while large doses of bland oil may naturally aid, enemata of warm water or oil constitute the most reliable remedial measures. By fitting the nozzle of a bulb syringe into an ordinary gum horse catheter, the latter can be slowly and carefully introduced up into the obstructed bowel, the water or oil being all the time slowly introduced. In this way the catheter becomes insinuated between the fæcal mass and intestinal walls, following the flexures of the intestine the full length of the catheter, and permits the fluids to mingle with and soften down the hard mass so that it readily passes away.

Repeated enemas for several days or even a week may at times be necessary, the foal in the meantime being muzzled if needed to prevent further ingestion of indigestible matters. In these the colic is rarely so acute as to warrant anodyne remedies. In that form of colic due to obstruction of the rectum of young animals at pasture by a gummaceous fæces, the cause of which we do not understand, the inversion of the rectum generally attracts more attention than the accompanying colic. It is to be remedied by the manual removal of the gummy fæces, aided by enemas of warm water, and its recurrence prevented by a change in diet.

The colic of intestinal paralysis is closely allied to that of impaction in many cases, but calls for a rather more delicate judgment in its treatment.

When the paralysis is due to a want of general tone in the animal, the result, most frequently, of inactivity and high feeding, we generally need only to wait, which is frequently about the most difficult of all courses to pursue, especially if the owner be present. Purgatives must necessarily increase the danger of the disease. Oleaginous laxatives and demulcents, by softening the intestinal contents, tend to relieve the malady. The pain is rarely extreme, and should, when necessary, be controlled by such remedies as will not interfere with

normal intestinal functions. Small, laxative doses of morphine frequently act nicely, relieving the pain and tending to overcome the disease. In one of my cases of a heavy draft mare in high condition and idle, one-half grain doses of morphia repeated two or three times daily controlled the colic perfectly, and on the sixth day without other medication the bowels moved normally and recovery was complete without purgation, while purgation would probably have led to superpurgation with unfavorable results. In fact, my observations of the use of morphine in intestinal paralysis, suggest strongly its use in severe impaction.

The treatment of volvulus and intussusception, owing to the difficulty of exact diagnosis, must be unsatisfactory. In the present state of our knowledge it should be practicable, where positive diagnosis is possible, to give relief surgically. In cases where they are suspected and surgical correction not undertaken, only palliative means are to be attempted, such as the relief of pain, prevention of gaseous distension and abstention from purgatives.

There is much variation in views as to the causation of these displacements, some ascribing them to the irregular muscular contractions of colics, others to the contractions induced by purgatives and others, in cases of volvulus, to the rolling of the animal during the agony of colic. The important point to consider in our present theme is the possibility of producing or preventing them during our care of a colic patient. Volvulus is largely attributed by writers to violent rolling, but, strangely enough, apparently occurs most frequently, according to statistics furnished by these writers, where the rolling is prevented as far as practicable, so that others, notably, Friedberger and Frohner, in whose opinion I concur, think this has been brought into too great prominence. In fact rolling is quite as likely, I think more likely, to correct such displacements than to cause them.

In a practice of sixteen years, without recorded numbers, but perhaps light in colics, in which I have habitually made post-mortem examinations when practicable, I have found but one case of volvulus, that involving the entire cæco-colic

mass, in which case from the history and symptoms the displacement must have occurred prior to the symptoms of colic, and the rolling certainly had nothing to do with it. Of intussusception I have observed three cases, one in an adult affecting the small intestine, the history unknown, probably antedating the colic, and not due to purgatives; the other two were ileo-cæcal in young foals, cases which I have already recorded, due to thrombo-embolic colic, the result of the presence of *strongylus armatus* in the mesenteric arteries. Friedberger and Frohner allude to this as a common cause of intussusception. From all the evidence at hand it seems improbable that intussusception is caused by rolling, nor can we believe by regular contractions due to purgatives. It seems probable that it is due to irregular intestinal contractions such as exist to a degree in colic, more perhaps in colic interfered with by injudicious doses of morphine, combined with purgatives.

I believe it quite rational to assume that such irregular contractions would ensue when colic is interfered with by conflicting treatment, by giving two remedies, like opium and aloes, the one in paralyzing doses, the other in doses to excite peristalsis. This precaution, with as nearly perfect freedom of the patient as possible and care to prevent gaseous accumulations, we believe will do all that is possible to avoid the dangers from these accidents.

In hernia and pressure from tumors we must rely upon surgical interference, but these operations may be made easier, safer, and in cases only possible by the previous use of narcotics or anæsthetics.

In colics due to thrombi or emboli we have an obstruction to the blood supply which must be relieved by the establishment of sufficient collateral circulation before recovery can take place, so our treatment is purely expectant and the result must depend upon the success or failure of the required collateral circulation before fatal lesions have occurred in the affected parts. We must rely upon those remedies which relieve the pain, without interfering markedly with peristalsis, although in most cases it may be safely diminished for a

time. Morphine in small or medium doses is indicated unless tympany is present, in which case it should give way to cannabis indica, or to chloral, alcohol and ether, the gaseous accumulations being studiously relieved by the use of the trocar. Purgatives are clearly inadmissible.

In spasmodic colic, while carminatives, stimulants, sedatives and other classes of remedies relieve in many cases, morphine certainly comes most rationally into use as the chief remedial agent, and it may be pushed to a very considerable degree. It should be constantly borne in mind, however, that *morphine is not soporific in solipeds, but, on the other hand, in large doses is uniformly and dangerously excitant*, as has been pointed out by Guinard (Jour. de Med. Vet et de Zootechnie, July, 1893), so that it must be used cautiously and not pushed beyond the degree needed for the alleviation of pain. No remedy is so misused and its actions so misunderstood by veterinarians as is opium, and its chief alkaloid, morphine. We are generally taught that it is soporific and depressant in the horse. So when the veterinarian makes too great haste to relieve pain by its use the horse becomes excited, nostrils dilated, eyes staring, tail elevated and the patient becomes uncontrollable, the victim of opium poisoning, while the improperly taught veterinarian tries to overcome this excitation by larger doses, adding more and more to the difficulty, finally ending in fatal opium poisoning, and the veterinarian is left wondering why his morphine would not quiet the patient. Not long since I read the communication of a layman of how the veterinarian of his locality habitually lost all colic cases because morphine failed to quiet them, but instead they were more restless and moved faster as more of the drug was given, while other horses treated by novices with sage tea or peppermint recovered, and drew therefrom the conclusion that, so far as colic is concerned, veterinary science is a conspicuous failure, and there was much logic in his conclusion.

I recently saw a horse very much excited by one grain of morphine given to relieve pain after castration, and to relieve this excitement two more were given which rendered the

patient utterly uncontrollable and dangerous to approach, and it was only with the greatest difficulty that chloroform was administered and a check placed upon a very serious looking case of opium poisoning.

So while we commend morphine in spasmodic colic we caution judgment. Owing to the generally empty condition of the digestive canal, purgatives are uncalled for, and, as already stated, should on no account be given if opium has been employed to relieve the pain.

Cannabis indica is preferred to morphine by many in these cases, and it certainly presents some points of superiority.

Hot fomentations and stimulating applications to the abdomen are probably of more service in these than in other colics.

Colic due to external mechanical pressure, such as being accidentally or intentionally cast in a cramped attitude, calls for little remark as to treatment beyond the very obvious suggestion to place the animal in a comfortable position. The fact that colics do arise from casting should suggest care in our methods to avoid cramping the limbs and body as far as possible, especially for operations of long duration. We should be careful, too, that colic patients do not have their malady aggravated by being left cast in an uncomfortable position, and also we should bear in mind that probably a not insignificant number of colics are due primarily to ill fitting, uncomfortable harness and improper hitching, by which the body is thrown in a strained position for a long period. In cases where colic may be traced to the presence of parasites in the digestive canal we generally find coincident debility, thus suggesting stimulants, carminatives and bitter tonics, combined with vermifuges, which latter should be followed by an aperient, preferably of oil, while in some cases, where the patient's strength will permit, a brisk purgative may be substituted with advantage.

The presence of calculi in the digestive canal are rarely diagnosed during life. They are then to be treated, if not by surgical interference, by oleaginous aperients and, if available, by warm enemata, in order to soften the fæcal matter and re-

lax the intestine in which the calculus is imprisoned. Drastic purgatives should not be employed as a rule, as their violent action may result disastrously, but if to be used at all, it should be done early, before the affected parts become paralyzed and inflamed.

Colic due to the ingestion of sand should be treated with a view to gently expelling the sand and allaying irritation of the bowels by means of moderate quantities of bland oil and demulcent gruels.

In general, we would say, in all forms of colic see first that no remedy administered can in any probable manner exert an unfavorable influence upon any pathological condition present. We should always avoid, until we have clear evidence of their necessity, purgatives and agents which induce intestinal paralysis, and in all events avoid, if the action of either is desired, the combination of the two. It should be constantly remembered that purgatives are rarely directly necessary or advisable, but commonly necessitated, or supposed to be, by the improper use of opium, a drug which annually kills ten horses with abdominal diseases for each one it saves.

ADDRESS

TO THE ASSOCIATION OF VETERINARY FACULTIES
OF NORTH AMERICA.

BY PROF. J. H. WATTLES, V.S., Kansas City Veterinary College.

Mr. President and Gentlemen:

While the subject of this address is ostensibly that of the results that have been obtained by prescribed entrance examinations, and as the subject is to-day largely prospective as far as my individual experience goes, my fellow members will pardon me if some digression is made, and some of the results considered that may be obtained by having positive and fixed lines for entrance examinations to be conducted upon, as well as some of the conditions that exist, and evils that might result, were each school allowed to act as its own censor in the matter of matriculation and graduation.

With the organization of the several faculties of the veterinary medical colleges of the country in the Association of Veterinary Faculties of North America, the fraternity and public had every reason to believe that a new era had dawned upon our chosen profession, and that while the pathway might not be strewn with roses, that the way was clear for our kindred professions to see that we were capable of maintaining that rank.

With solely fraternal and educational objects in view, the association of faculties was formally organized in Philadelphia, last September, and to those who had the pleasure of attending that meeting, will always remain a remembrance of the kindly spirit in which all of the deliberations were maintained. Without acrimony or intemperate language, and with a full and generous consideration of the many different conditions and surroundings of the several schools, the constitution of the association was adopted, and I earnestly believe with liberal ideas on the subject of advanced education, we meet again to-day.

There is no reasonable doubt existing in the mind of any impartial and disinterested person of the necessity of a higher standard of educational requirement in the matriculation examinations of our respective students, and we can all see very plainly, that it is only a matter of a very short time when every college that will be recognized as coming up to the standard will have adopted a minimum grade for the admission of students. With these points so clearly in view, and with the upward and onward tendency of the leaders in our profession, and with positive knowledge that different States are formulating laws regarding veterinary practice, it seems to me to be a rational conclusion that the proper thing for us to do is to act in the matter at once and not wait until compelled to act, and for all the colleges of this continent to unite with this association in endeavoring to create a certain standard in the admission of students, in their advancement in their respective studies, the length of time they shall be required to attend, and their final graduation.

By having positive rules laid down as to the admission of

students, every one will be perfectly satisfied that the gentlemen who graduate are capable, educated men. We will then be assured that men are not allowed to graduate simply because they have been in empirical practice for a time, or because they are druggists, or because they hold some classical degree, or a diploma from some normal school; on the contrary, we will know that they are men that have been educated for the veterinary profession, in veterinary colleges, and are capable of practicing in that profession.

It is important to us all that the moral character and business principles of men about to enter our profession be inquired into before they are allowed to matriculate. My belief is that every applicant should be required to fill out a printed blank, agreeing to comply with all of the rules of the college he wishes to enter, and also agreeing to comply with the code of ethics of the State in which he may enter practice. This surely would be no hardship for any honorable man, and we do not desire any other in the profession. It is surely a very embarrassing thing for us to come in contact in our practice with men that are graduates of recognized colleges, and to affiliate with them because of some underhand business methods, or because they are drunkards or gamblers, and it seems to me that close scrutiny should be made of intended students before admitting them.

One very important matter that needs the close attention of this association, is that of the actual time of attendance of students. It seems to me to be a ridiculous proposition, to say in an announcement that we require attendance on a certain number of courses of six months each, and then to allow men to attend only a fraction of the time. To illustrate this phase of the subject: Suppose a student enters in November, 1893, and he is allowed to come up for final examination the following spring and is passed, the student's name appearing in the list of graduates in the catalogue, issued in 1894. Could he have attended more than four and a half months actual time?

Suppose the fact to exist that schools were in the habit of allowing men to enter the school and appear for final exam-

inations at the end of one school year, and even the year shortened by the late appearance of the student. Could a student acquire sufficient knowledge in so limited a time to become proficient in our science? The class of men usually applying for time allowance is some man that has been in practice in some small town where there has been no qualified practitioner until the appearance of one that has recently graduated from some college, enters the neighborhood, and forces the older man to protect himself by gaining a diploma, or else they are forced into college by the action of State laws. My experience with this class of men, as students, is that they grasp ideas slowly, and make the poorest practitioners when out.

The requirements of the college that I have the honor to represent, during the first two years of its existence were the same as in other two-year colleges, and I can look back over our brief period of existence, and see nothing to regret, except the fact that we admitted during our first two years, men who had been in practice for some time, and allowed them to appear for final examination at the end of the first year, happily for us, we were soon satisfied with the experiment, and the practice was discontinued. We during the same period allowed licentiates and graduates in pharmacy to enter the senior class, but we soon discovered that the time was too limited for them to acquire sufficient knowledge, and this practice was also abolished.

For the past two years our matriculation examination has been up to the standard required by this association, consequently we were in no manner disturbed by adopting the rules of this body, and unless my judgment is very much at fault, there is not a college in America that would not be benefited by adopting the same rules, and maintaining a rigid adherence to them.

All applicants for matriculation in this college are now required to fill out the printed application furnished by the school, in which they agree to conform to the established rules. All applications for admission are acted upon at a regular meeting of the faculty, and the application must be ap-

proved by three-fourths of the number present at such meeting. This takes the responsibility out of the hands of one man, and places it where it justly belongs, in the hands of the entire faculty. We require an actual attendance of upon eighty per cent. of all lectures, and no student is allowed to come up for examination that has not attended the required percentage. This does away with the practice of students entering or leaving school at will, or non-attendance upon lectures or other forms of instruction.

Every inducement is held out to our students to take the three years' course, with the result that fifty per cent. of those who entered last year have accepted, and fully as large a percentage will begin the three years' course this session. As we have not felt strong enough as yet to put on a three years' compulsory course, we have met the condition as far as we possibly could by making an optional course of three years, from which it is but a short step to the regular course prescribed by the representative body of our profession, and now adopted by the leading colleges of America.

With the firm conviction that in union there is strength, and with every desire to advance the interests of our profession; with the belief that only by union in action, kindness in our discussion, charity to all, that we can reach the goal of our ambition in our life work, I thank you for the honor you have conferred upon me by giving me your attention.

P. S.—Since preparing this address for this association, the Kansas City Veterinary College has decided upon a three year compulsory course, beginning January 1st, 1896. This present session will be the last that students will be admitted for a two year course.

REPORT OF THE COMMITTEE ON DISEASE.

By M. R. TRUMBOWER, Chairman.

Read before the United States Veterinary Medical Association.

GENTLEMEN:—In making this report, I have, possibly, made an innovation in comparison with the former reports of similar committees, inasmuch as that it may be regarded as a

medley. I have sent out 200 circular letters, requesting information regarding contagious and infectious diseases, improved methods of treatment, etc.

My colleagues, Drs. Reynolds, Harger, Faust and Dinwiddie, will each contribute special reports on specific diseases. I have endeavored to obtain reports in a general way of the prevalence of disease, etc., throughout the United States, and will give the interesting sections selected from the numerous replies received. Some of the reports and opinions offered may be conflicting in their tenor, but I believe that in drawing the attention to these conflicting opinions, we may open up a field for thought and criticism, and thereby gain more than we would by taking the old cut-and-dried method of generalizing too much.

I do not know of any new discoveries that have been made in pathology during the past year; and many of the older theories in regard to specific diseases are still held in abeyance; therefore, I shall not attempt to repeat what has already been stated in former reports.

Evidently, it appears that no extensive outbreak of any one disease has been observed during the past year, although in some States the reports of the present year would indicate this; but we must remember that a certain class of diseases are now reported by veterinarians, or are being discovered by State Sanitary Boards, that have had very little attention given to them heretofore.

If it were not for making this paper too long, I should like to go somewhat into the detail of the history of preventive inoculation, and especially that of the anti-toxine fad.

The theory upon which this new theory is based is an outrage upon all known physiological and anatomical knowledge, and the veterinarians who associate themselves with the advocates of this extraordinary hallucination will surely regret the support given to it by them within the next ten years.

Trusting that many of these subjects may be brought up during this session, as I know they will, by gentlemen who have papers prepared on anti-toxine cultivations, I shall now

proceed to make reports from the various States as I have received them. I regret to state that I was disappointed in obtaining reports, from Pennsylvania and New York especially, in answer to a number of circular letters I sent to these States. I should have had more reports than I obtained. I may have been unfortunate in selecting the veterinarians to whom I addressed my letters, nevertheless, I have an impression that some of those to whom I addressed a circular letter might have given me something that would be of interest to the profession.

ALABAMA.—Dr. C. A. Carey, of Auburn, writes as follows:

“I wish to say to you that a number of veterinarians and others have written reports upon Bursattee, the India disease, as occurring extensively in the South. I do not believe there is any such disease in the United States, and call upon its discoverers to prove its existence in the United States.”

I take pleasure in joining Dr. Carey in the request.

CALIFORNIA.—Dr. R. A. Archibald, of Sacramento, furnishes us with the following brief report:

“Anthrax, tuberculosis, and glanders, are very prevalent in this State, more especially anthrax, which exists in the form of splenic apoplexy. The last named disease destroys an enormous amount of live stock yearly in the central and southern portions of the State. It has one peculiarity, inasmuch as it appears in a more benign form than it has done in the Eastern States. One or two veterinarians have commenced vaccination for its prevention, but at this time I am unable to say with what success.”

COLORADO.—Dr. Chas. Gresswell, of Denver, reports as follows:

“With respect to the prevalence of tuberculosis among the dairy and breeding herds, I have to state that only one case has been reported and proven, by the tuberculin test, to be this disease during the year. It is quite true that we have not, as yet, thoroughly examined all the dairy herds of the State, but those around Denver and a few of our principal cities are now under the inspection of the officers of the local health boards. I think I shall be safe in saying that the dis-

ease is absolutely non-existent among our range herds, and also among our breeding herds. There may be a few cases among the dairies which have not come to our knowledge, but, if so, we have no doubt that they must be imported stock. My experience of seven years in this climate leads me to say that judicious outcrossing of families hereditarily predisposed, and the peculiar advantages of this climate, without overcrowding or exposure to other unsanitary conditions, cause animals to become, to a very large extent, proof against contracting this disease.

Glanders, as you will see from the enclosed report, has existed in the State during '93 and '94; twelve in '93, and seven in '94, but all the cases resulted from an importation from St. Louis some few years ago. Very many cases of catarrh, simple and malignant, assume a chronic form in this altitude, which has many of the characteristics of glanders, and we believe in the past a great many of such cases have been wrongly condemned for glanders; at the present time I do not know of the existence of this disease in the State. The people here are thoroughly alive to the danger of glanders, and quickly report any suspected cases. I do not hold the view that glanders can be so differentiated by the climate of the Rocky Mountain regions that it can assume the extraordinary mild form described by some observers, nor that any such form could exist to any large extent, because the great changes of temperature, always existing here, would be sure to cause a malignancy at times which could not be mistaken, and which would distribute the disease to a far greater extent than it is now met with. Such cases as have been reported as a mild and latent form of glanders, we believe to be nothing more than the chronic, malignant form of catarrh above noted. This opinion has been verified in Colorado by many post-mortem examinations, and by the mallein test.

"Except among the garbage-fed hogs near our large cities, until last year we have had very little cholera, but last year, owing to the drought in Kansas and Nebraska, a great many store hogs were brought from these States into Colorado, and brought with them the disease to a large extent, and I am

afraid we have now several localities more or less permanently affected.

"During the last three years we have inspected over 650,000 Southern cattle which have passed into or through this State, without the occurrence of a single outbreak of Texas fever. The quarantine against Southern cattle is vigorously carried out by special inspectors appointed by the Board.

"I think if our County Commissioners can be prevailed upon to see that the carcasses of all animals which have died from anthrax or anthracoid diseases are thoroughly disposed of, in order to prevent contamination of the soil from this disease, we shall be able to report in the future a death rate from such diseases of less than one-third of one per cent. We endorse Pasteur's system of preventive inoculation for anthrax and anthracoid diseases.

"Spasmodic glottitis is a disease peculiar to the Rocky Mountain regions, and is characterized by great difficulty of breathing on exertion. It finally causes total asphyxia and collapse of the animal if urged into a gallop. It is due to nervous contraction of the muscles of the larynx, dependent upon disease of branches of the pneumogastric nerve which gradually increases in severity, and causes death of the animal in from one to six months after an attack. It is confined almost exclusively to range horses, and to special localities. Six outbreaks have come to my knowledge in the State during the past two years, with a loss of about 250 head of horses.

"The loss from scab in sheep is serious, and demands vigorous and continuous handling for its complete eradication, and immunity from outside invasion should be guaranteed.

"Losses from poisonous weeds and grasses on the open range are unavoidable, and must be for the most part accepted as one of the penalties of the range business. Such poisons are not as a rule eaten by any animal unless the natural grasses are scarce, and at times in the year when such poison plants are ahead of other vegetation in growth, and are then more dangerous to the semi-domesticated animal, with the natural functions of food selections not so well developed. Closely allied to the poisonous grasses in their effects are var-

ious forms of saccharine plants in their early or stunted development. In one period of the growth of the sorghum plant, when conversion of the vegetable starch into sugar is taking place, the plant is poisonous. I investigated several deaths from this cause during this year, when the excessive drought and early frosts had stopped the growth of some fields of sorghum, which were not protected from the open range."

DELAWARE.—Dr. H. P. Eves, of Wilmington, writes as follows:

"You are well aware of the fact that our State of Delaware is extremely small compared with her sister States, but we are at present well represented with diseases. We have dreaded Southern, or Texas fever encroaching upon us, and within the last two or three years we were troubled with a slight outbreak. Glanders within the last year have caused more or less trouble in our city and some of the adjacent townships. I can report one death of the owner of one of the animals, who contracted the disease while treating his horse. At present I do not know of a case.

"Cerebro spinal meningitis (so-called) is prevalent throughout the State. I can safely state that hundreds of horses die yearly. We have been striving to discover the cause, taking all steps possible, but as yet we are at sea. We have outbreaks during every month of the year; hot, cold, dry, and wet seasons. During the last ten years, judging from personal observations, the loss caused by the above mentioned disease amounts to hundreds of thousands of dollars.

"Tetanus prevails, but the number of cases yearly have been greatly reduced, due to the advice given by veterinarians.

"Tuberculosis is alarmingly present in the northern part of the State, especially within twenty miles of Wilmington. A great many cows have been tested with tuberculin, and we have found in a few herds as high as 75 per cent. diseased.

"We have had several outbreaks of anthrax during the last four years, and at present the disease exists in the salt meadows bordering the Delaware Bay, about 25 or 30 miles

south of Wilmington. Some farms on which the disease exists have almost lost their entire herd.

"Vaccination within the last two years has been practiced with success. It being impossible to pasture cattle in some districts without taking this precaution. No deaths have been reported on infected pastures where the animals have been treated.

"A fresh outbreak of anthrax a few weeks ago on an upland meadow was reported. The history being that no such disease has been known on the farm within the present century. Through the pasture runs a stream carrying the refuse from a morocco factory. Animals kept dying as long as the pasture was used, but it has been abandoned. We have one pasture in the city where cattle have been dying for four consecutive years.

"Rabies has been causing a great amount of trouble among dogs, cattle, and human beings as well. At least fifteen or twenty persons have been sent to Pasteur Institute for treatment.

"The tuberculin and anthrax vaccine used is manufactured by the bacteriologist of our Experiment Station at Newark, Del. I can positively state that both products are effective in their actions. I have had a great deal of experience with the tuberculin, and find it equally as effective as the Koch product. We have been fortunate enough to hold post-mortems on cases condemned with but very few exceptions, and have found the disease in every case where a reaction followed the injection.

"The State work of Delaware is under supervision of the director of the Experiment Station."

NORTH DAKOTA.—Louis C. L'Moore, V.M.D., of Jamestown, contributes the following report:

"Glanders in horses is our chief and most destructive malady. It is quite prevalent, and while at times it seems to diminish, it will again break out with new vigor and become as prominent as ever.

"Tuberculosis in dairy herds does not exist at all to my knowledge. It has been said by some veterinarians that

tuberculosis existed in a herd of short-horned cattle, but investigation by tuberculin and post-mortem revealed the contrary.

"Black-leg exists this year on the bottom lands of the Missouri River to the extent of one per cent.

"In the year 1893, there were 103 head of horses destroyed for glanders. In 1894, 113 head. This year there will be an increase of at least ten per cent. over the previous two years. This disease will doubtless be as prevalent for years to come as it is now, or as long as the Government continues to buy horses of Tom, Dick, and Harry, on contract, to supply the Indian Reservation in the State."

I take pleasure in announcing that Dr. Hinebaugh, of Fargo, will present a report in person on the "Millet Disease"—a continuation of his essay at the Chicago meeting in 1893. He kindly contributes the following brief note to this Committee:

"I have been experimenting during the past two years with turpentine as a means of healing up deep sores and fistula of the withers and poll. During all my experiments I have not failed to cure a single case rapidly where the bones were free from disease. I clean the cavity with a diluted solution of carbolic acid, being careful to wash out all the pus and decayed tissues. I then cover the edge of the wound with tallow, lard, or linseed oil, and inject turpentine into the cavity until it is nearly full. Repeat this operation after about three days, and usually about three or four applications is sufficient to cure the most aggravated forms that I have come across where no diseased bone is present. Four applications is the most that I have ever made. I did not use the knife in those cases, and thus far it has proved an entire success, passing beyond my expectations."

W. F. Crewe, of Devil's Lake, contributes the following:

"I have acted as District Veterinarian for the past two years, my district comprising nine counties. During this time I have destroyed 63 head of horses for glanders; 38 the first year and the balance the second.

"I received two calls of reported anthrax, but found no

cases affected on inspection. The loss in the district from this being about 35 head during the two years."

SOUTH DAKOTA.—Report from Dr. G. W. Palmer, Lennox:

"The principal disease to contend with in this State is glanders, of which 102 cases in 1893, and 43 cases in 1894, came under my observation. My attention has been called to only one herd of bovines that were afflicted with tuberculosis. That was in a herd of high bred short-horned cattle. The disease came to this herd from Iowa, and is still confined to that herd. Our native cattle are free from disease except lumpy-jaw, and a few cases of black-leg in the spring and fall of the year."

IOWA.—In reply to a special request, Dr. G. A. Johnson, of Sioux City, writes concerning the "Corn-stalk Disease" and the so-called "Bottom Disease," the following:

"In reply to your favor of the 19th inst., will say in regard to corn-stalk diseases, that in the AM. VET. REVIEW, Vol. 14, page 697, there is an article on that subject which was presented by myself in the form of a paper before the I.S.V.M.A. In that article I presented my views at that time, which later investigation has only served to strengthen. In the article as published, in the second paragraph, fifth line, it should read, 'according to the old dry-murrain theory,' instead of 'the old dry-American.' I have since seen another outbreak similar to the history given by me in the discussion that followed the reading of my paper. Also one outbreak among steers that were in pens being fattened for market. They were being fed snapped or jerked corn, that is, ears with the husks on. Some three out of about twenty died. Those that died presented symptoms similar to those of other outbreaks. Not having held post-mortem examinations, I could not say what were the pathological lesions of these cases, further than that the owner stated that the contents of the omasum were fluid in each case, and that no other lesions were manifested which attracted his attention, except some congestion or engorgement of the lungs, but as he could not tell whether this was an ante or post-mortem change, it could not be of any weight.

“In regard to the so-called ‘Bottom Disease,’ will say that my personal experience is very limited, but I have made much inquiry relative to the disease, and from such a source I am lead to believe it to be a cirrhosis of the liver, closely resembling malarial cirrhosis in man. I am very positive, from what I have been able to learn about it, that there is no connection between the disease and the so-called ‘Rattle-Weed’ (*crotalaria sagittalis*), for both of the cases that I have had the fortune to see, received hay that was free from this weed, while on the other hand, I have seen horses eating hay where nearly one-half of the bulk was rattle-weed, and none of them developed any symptoms of Bottom Disease. This of itself would not signify much were it not corroborated by many who have had much experience with the disease. I will send you by to-day’s mail a copy of the Iowa State Medical Reporter (Sept. 1884), that contains an article by Dr. D. S. Fairchild, which I consider to be the best article yet published on the pathology of this disease. It is evident from the history of the cases given by him that all the cases which he saw were what should be called acute cases, for many of the horses that die with this disease are affected with it for from four to six months. Another fact that should be taken into consideration is that the investigation was conducted principally to prove the *crotalaria* theory, and the experiments that are given in this article were conducted by some student and are wholly unreliable.”

Dr. W. B. Niles, of Ames, writes:

“No disease has been unusually prevalent. Swine diseases have, however, occurred in this region earlier than is usually the case. I have studied an outbreak of swine disease which proved to be swine plague, in May and June. The Government remedy apparently did no good. The most serious disease in this State at present is tuberculosis. This is much more prevalent than has been heretofore supposed. The tuberculin test has revealed it in many herds that had been supposed free from it. Dairy herds are most involved, but many breeding herds are affected.”

F. H. P. Edwards, of Sioux City, writes:

“ Ectozoa and entozoa have been very plentiful in all domestic animals, especially in dogs and horses. *Ascaris megalocephala* and *strongylus tetracantha* being the most prevalent; the latter in horses, causing several deaths with the usual symptoms.

“ Influenza is quite common in a mild form. Actinomycosis, tuberculosis, and hog cholera, have also come under my observation in the last year.”

(*To be continued.*)

SERUM THERAPEUTICS.*

BY S. J. J. HARGER, V. M. D., Phila., Pa.

A Paper read before the Pennsylvania State Veterinary Medical Association
at Cresson Springs, Pa., Sept. 8th, 1895.

The discovery of serum therapeutics, now applied in practice, has opened a new era in the treatment of disease. Although confined as yet to a limited number of diseases and not yet thoroughly tested, this method of treatment has opened a field of experimentation whose limits to-day we cannot define. A general resume of the subject may not be amiss before this meeting.

It is known that the vegetable alkaloids, abrine, ricine, etc., very poisonous to animals, can, when given in repeated and very small increasing doses, develop an immunity in these animals which are thus able to withstand a quantity of these substances rapidly fatal to those not previously treated. A product is formed in the system which becomes sufficiently abundant to neutralize the toxic action of these poisons. Likewise in morbid processes, the repeated introduction into the system of a microbe or its product called *toxin*, causes the formation in the economy of a substance called *anti-toxin*, which is capable of counteracting the pathogenic action of such microbes or their poisonous excretions. This, in a word, is the basis of the so called anti-toxin treatment. The anti-toxin

*The experimental information is drawn from “Annales de l’Institut Pasteur,” Sept., 1894.

is thus reciprocally successful to combat microbes or their products, to which it owes at least indirectly its origin.

Serum therapeutics was first studied in a crude way in cow-pox septicæmia in the dog, but has only attracted special attention since Behring and Kitasato have demonstrated the properties of the blood-serum of animals immunized against tetanus and diphtheria. They recognized in the blood-serum of such animals both preventive and curative properties when injected either before or after the introduction of disease germs into the body.

Some anti-toxin blood serums have the power of counteracting the virus of other diseases. Thus, the serum of animals immunized against symptomatic anthrax is effective against the bacillus of acute septicæmia (Duntschman). The serum of a healthy man, and at times that of the horse, is immunizing against the intraperitoneal injections of cholera (Pfeiffer). The prophylactic action of blood serum is therefore not absolutely specific; it is possessed in some instances by normal serum.

Both the toxin and the anti-toxin are albuminous bodies, very similar in chemical properties but different in physiological action, and precipitates by alcohol, which permits of its preparation in a condensed form.

Preparation of the Toxin—The process of preparing the toxin varies with the variety of the specific microbe. Suffice is to say that the latter is grown upon a favorable medium, such as bouillon, gelatine, agar, etc., the mature culture (diphtheria) being passed through a Chamberland filter; the filtrate, a clear liquid containing the toxin, is preserved in well filled corked bottles. It gradually loses its activity.

Immunization of the Animal.—This may be accomplished by subcutaneous injections of small and repeated doses of pure or heated toxin; a better method, that of Roux and Villard, consists in mixing three parts of toxin with one of Gam's solution of iodine. The initial dose in the rabbit is one-half cc. (7 drops) repeated every three or four days for several weeks; the dose is then gradually increased, and finally the undiluted toxin is given. The horse is the animal usually selected to

furnish the anti-toxin serum of tetanus and diphtheria. He is not very sensitive to the diphtheritic virus, but the serum can be readily obtained in large quantities by bleeding from the jugular vein, and, besides, this serum has proved to have a strong anti-toxic power. Of course he must be free from any disease, and glanders must be eliminated by injections of mallein. For diphtheria, the cow, dog, sheep, goat and rabbit can also be used. The cow is very sensitive to the diphtheritic poison, even fatally so; the toxin is excreted with the milk.

Formation of the Anti-toxin.—The anti-toxin is a cellular secretion, but it is not determined which set of cells are active in this process. It is not a transformation in the body of the toxin injected. The anti-toxin diminishes with the cessation of the toxin injections. In one experiment, two rabbits were each injected with 103 cc. of tetanus toxin, the first in 33 daily doses, the second in 9 larger doses. The serum of the first neutralized 150 parts of tetanus toxin; that of the latter only 25 parts. The two serums were of unequal preventive power; the quantity of toxin injected was the same in both cases but the method of administration differed. By successive bleedings in the rabbit, a quantity of blood equivalent to the entire volume of the circulation can be removed and anti-toxic power of the blood is not sensibly lessened. The anti-toxin is secreted rapidly as it is drawn away without any new injections of toxin.

An important question is the manner of action of the anti-toxin after the introduction into the body. In diphtheria and tetanus it counteracts the effects of the toxin; in some diseases it is protective only against the microbe and such animals as remain as sensitive to the toxin as those which are not immunized.

A mixture of anti-toxin with an immunizing power of one billion, and tetanus toxin one one-thousandth cc. of which destroys a mouse, in proportion of 1 to 900 becomes harmless. One-half cc. (one eighteen one-hundredth cc. serum) injected into a guinea-pig does not produce tetanus. This result, however, is not always the same; a mixture innocuous to mice is fatal to guinea-pigs. In eight out of ten guinea-pigs one-half

cc. (one nine-hundredth) is inactive, while the remaining two develop tetanus; again one cc. (one five-hundredth) is harmless to guinea-pigs while three cc. cause tetanus.

These experiments show that it is not a question of neutralization or chemical union between the toxin and anti-toxin in the blood, but rather the stimulating action of the former upon the animal cells, enabling them to resist the action of the virus of the disease.

The existence of a previous disease or a previous injection of microbe products is not without effect. It weakens the animal tissues which respond less strongly to the stimulating action of the anti-toxin. Roux and Villard injected five guinea-pigs with one-half cc. of anti-toxin serum and toxin (one to 900) with a negative result. Five other guinea-pigs, which had some time before been immuned against the vibron of Massaonah, developed tetanus, while the same treatment as the preceding five, one-third cc. only produced tetanus when the animal is subsequently injected with microbic product, coli bacilli, etc.

In eighty days, this horse, the details of immunization of which I will cite at the end of this paper, received over eight hundred cc. of toxin without any symptoms other than a slight local œdema and an elevation of temperature of one degree.

The serum of a horse immunized in this manner had a preventive power of more than fifty thousand; that is, a guinea-pig inoculated with one fifty-thousandth of its own weight of the serum twelve hours before will resist the action of one-half cc. of a virulent culture of diphtheria bacillus. One-tenth cc. of this serum and one cc. of diphtheria toxin does not produce any œdema in the guinea-pig when injected under the skin.

The horse is kept in this condition of immunization by injections at intervals of fifteen to twenty days of diphtheritic toxin (about 200 to 250 cc.).

Roux and Martin immunized a horse with 40 cc. of the toxin heated to 65° C. given in eight doses at intervals of ten days; he was then injected with 1 cc. of pure toxin repeated at regular intervals. The virulent bacilli are also employed for this purpose.

The serum employed by Roux and Martin in children and guinea-pigs in doses of $\frac{1}{10}$ cc. killed the latter in forty-eight hours. Guinea-pigs injected with a quantity of serum equal to $\frac{1}{100000}$ part of their weight resisted a dose fatal to control animals in five days; $\frac{1}{50000}$ immunized them against a quantity fatal in 48 hours.

Infection having taken place, the quantity of serum necessary to preserve life must be in proportion to the time elapsed since the introduction of the poison into the system. Guinea-pigs receiving a dose fatal in forty-eight hours survived after an injection equal to $\frac{1}{1000}$ part of their weight six hours afterwards; the same treatment twelve hours afterwards was ineffective.

This is the principle of the serum treatment of diphtheria in children, which in many instances has given such happy results. The anti-toxin is not of uniform strength in all cases, a fact which explains the alarming and even fatal symptoms occasionally seen.

The dose must be graduated according to the virulency of the serum, the weight of the subject and the time elapsed since the introduction of the poison.

The following illustration will show the manner of immunization: Horse, seven years of age, weight 900 pounds. Serum very active; $\frac{1}{10}$ cc. killed a guinea pig in forty-eight hours. Injected hypodermically in the neck or behind the shoulder.

1st day, injection of $\frac{1}{4}$ cc. toxin ($\frac{1}{10}$ iodine); no reaction, local or general.

2d day, injection of $\frac{1}{2}$ cc. toxin ($\frac{1}{10}$ iodine).

4th, 6th and 8th days, injection of $\frac{1}{2}$ cc. toxin ($\frac{1}{10}$ iodine).

13th and 14th days, injection of 1 cc. toxin; ($\frac{1}{10}$ iodine); no reaction.

17th day, injection of $\frac{1}{4}$ cc. pure toxin; slight œdema, no fever.

22d day, injection of 1 cc. pure toxin; slight œdema, no fever.

23d day, injection of 2 cc. pure toxin; slight œdema, no fever.

25th day, injection of 3 cc. pure toxin, slight œdema, no fever.

28th day, injection of 5 cc. pure toxin; slight œdema, no fever.

30th, 32d and 36th days, injection of 5 cc. pure toxin; slight œdema, no fever.

39th and 41st days, injection of 10 cc. of pure toxin; slight œdema, no fever.

43d, 46th, 48th and 50th days, injection of 30 cc. pure toxin, œdema marked, disappearing in forty-eight hours.

53d, 57th, 63rd, 65th and 67th days, injection of 60 cc. pure toxin, œdema marked, disappearing in forty-eight hours.

72d day, injection of 90 cc. pure toxin; œdema marked, disappearing in forty-eight hours.

80th day, injection of 250 cc. pure toxin; œdema marked, disappearing in forty-eight hours.

TETANUS.

The toxin of tetanus is very active. A healthy horse has been destroyed by $\frac{1}{10}$ cc. (2 drops). Horses can be immunized against tetanus in the same manner as against diphtheria. The toxin pure, heated to 65° C. or mixed with iodine is injected in repeated and gradually increasing doses at intervals. The animal thus becomes so "accustomed" to the poison that 250 to 300 cc. can be given at a single injection, enough to destroy 2,500 horses (Nocard).

This serum is preventive and curative; it can be used as a vaccine or a therapeutic agent. Injected under the skin of a tetanic subject it is efficacious only in proportion as the time elapsed since the infection has been short. I have no statistics of this treatment in a horse, but hope to be able to give it a trial. It is useful as a preventive only when the virus, or shortly afterwards, is introduced into the circulation. Unlike diphtheria, tetanus is not recognized until the system is saturated with the poison, then no treatment is of much avail.

The serum may be recommended as a preventive in places where tetanus is almost epizootic, or in certain operations and wounds of the extremities which are frequently followed by tetanus, in addition to the regular surgical treatment. For

this purpose Nocard injects under the skin, behind the shoulder, 10 cc. of anti-toxin serum repeated in two weeks.

Let me suggest peroxide of hydrogen as a local dressing in wounds of the extremities in particular. This preparation freely gives off oxygen, and the tetanus bacillus, which is confined to the seat of traumatism and does not enter the circulation, cannot live in a medium exposed to oxygen.

PHYSICAL DIAGNOSIS.

BY JACOB HELMER, D.V.S., Scranton, Pa.

A Paper read before the Pennsylvania State Veterinary Medical Association
at Cresson Springs, Sept. 3, 1895.

Physical diagnosis is the process of distinguishing diseases by their physical (objective) signs, without recourse to subjective symptoms. It depends on scientific methods of physical examination as inspection, auscultation, percussion, palpation, mensuration and succession, assisted by any mechanical aids or instruments that may, by extending the power of physical senses, be useful in detecting the signs of disease. Its conclusions are confirmed by clinical observation and the autopsy.

A paper limited to the time of a brief essay cannot apply the idea of this subject to the variety of diseases of the organs and tissues found in the animal body. We therefore select a group: The *pulmonary diseases of the horse*, and confine this article to a discrimination of them by the methods of physical diagnosis.

The value, comparatively, of the methods of physical examination is less in the veterinary than in the human practice of medicine. The anatomy of the horse's chest renders thorough physical examination extremely difficult. It is not easy to listen and hear sounds through such a thick wall. The voluntary movements of the skin over the panniculus carnosus muscle interferes. The usual restlessness of the animal and the awkward attitude of the examiner are among the obstacles to be overcome.

Inspection.—This signifies the use of the sense of sight to

detect physical signs. Inspection of the exterior of the chest reveals its form or shape, and the number and character of its movements. We need not dwell upon the idea of *Form*. It generally indicates in the horse degrees of vital capacity consistent with excellent health. Tubercular tendency or disease in the human family renders study of the form and size of the chest practical and necessary.

The movements of the chest are of great importance since they constitute the first steps of the act of respiration, and all other steps depend on them. A respiratory act consists of an inspiration and expiration and a pause. This cycle is completed by a contraction and expansion of the chest walls.

In health and at rest the movements of contraction and expansion are normal in number and character. When above normal number they are frequent, as during exercise. Frequency of movement not caused by exercise or thermic conditions is a sign of disease. Infrequent respiratory movements are abnormal and are usually due to morbid changes in the brain or the action of narcotic poisons.

The movements of the chest walls may be partial or complete. A partial or limited movement of contraction signifies shallow respiration and the use of little air in the lungs. A complete or extended contraction indicates powerful and deep respirations and the change of much air in the lungs. These characters may be both frequent and infrequent.

The natural rhythm of the movements may be disturbed; hence these may alternately be regular and irregular. Again, the relation existing between the thoracic and abdominal movements in health may be broken. When by conditions of disease constriction of the thoracic muscles and diaphragm occurs, thus lessening their normal movement and amount of work, these movements in the assisting abdominal muscles become increased. This is well marked in pleurisy, where the abdominal muscles are brought to perform an unusual amount of work, while the thoracic muscles are more or less fixed on account of pain in the inflamed pleura. In peritonitis, where the pain is felt under the region of the abdominal muscles, these become fixed and the normal movements of

the thoracic muscles are increased. Inspection in pleurisy with hydrothorax notes an increase in the size of the lower part of the chest. The attitude, breathing and facial expression of the animal denotes pain. The abdominal furrow or ridge, the extent to which the abdominal muscles are brought into use. Inspection notes the double movements of the abdominal muscles in pulmonary emphysema, and assisted by the thermometer, it notes the rise and fall of animal heat.

Palpation.—This in medical language denotes the process of examining morbid conditions by the sense of feeling or by touch. By it we recognize tenderness, resistance, fluctuation, pain, the presence or absence of normal animal heat, also impulse from movements of an internal body or organ. Subcutaneous emphysema is detected by laying on the hand. It detects a crackling sensation under the skin, caused by the movement of air in the cellular tissue. By palpation we note the character of tumors as fibrous, osseous, granular, soft, hard, or fluctuating. Palpation is useful as an aid to inspection and percussion. By it we note difference in resistance as well as of sound in percussion. Application of the hand to the chest informs us of the number and force of the beats of the heart, the shape of the chest walls, their movements or number of respirations and the character of them. We note sensitiveness to pain on pressure, and sometimes the friction murmur or pleurisy.

Mensuration, or a system of the measurements of the chest as an aid to diagnosis, is not commonly practiced by veterinarians. It might be useful in the study of pleurisy with hydrothorax in the horse if the diseases were unilateral, as in man. But all we can learn by any system of measurements, however skillfully applied to the chest of the horse in pulmonary and cardiac trouble, may be known from the other methods. The first measurement, if made with a graduated tape, around the body from a point slightly posterior to the withers. At least there, such measurement should be made at a few inches distant from each other. These measurements should be taken at the end of a complete inspiratory and expiratory movement; at least in the same stage of the

respiratory movements. A second series of measurements are made, beginning at a given point on the withers to the commencement of the cartilage of the false ribs, beginning with the eighth. Again from the lower end of the third rib to the same points. Lastly, along the middle of the chest, from the posterior border of the shoulder to the margin of the last rib. These measurements are made at the same points on both sides of the chest, and at the same point of contraction and expansion of the chest walls.

Of the methods of physical examination applied to detect diseases of the chest, the most important ones to us are auscultation and percussion. Before applying these methods let us, for convenience and accuracy, divide the chest into three regions; an anterior and two lateral. The lateral regions may be further sub-divided in nearly three equal parts by drawing two horizontal lines across the chest. These subdivisions are a superior, a middle and an inferior third. The superior third contains lung substance, closely in contact with the internal wall. The middle third contains much lung substance; also the large bronchial tubes in its anterior part, and the large blood vessels at the base of the heart. In the lower third there is less lung substance, but in its anterior part the heart is principally situated opposite the third, fourth, fifth and sixth ribs. This area, sometimes designated the triangular space, is covered by the forearm and its extensor muscles. The limb must be pulled forward in order to examine the region over the heart.

Auscultation is the art of listening over a part to detect abnormal sounds and especially the condition that gives rise to them. It is the most important method of physical diagnosis. It was discovered by Reno Theophile H. Laennec, who lived from 1781 to 1826. It was introduced into veterinary practice by Delafond and Leblanc. The facts elicited by auscultation and percussion and their verification by post mortem examination revolutionized the knowledge then in existence of the disease of the chest and began an era of exact demonstration.

Auscultation is of two kinds, mediate and immediate. In

the former, an instrument, the stethoscope, is placed between the ear and the part to be examined. Immediate auscultation is when the ear is laid directly against the part. The veterinary practitioner should depend upon the ear only. An excuse for the use of a stethoscope is afforded when parts have been blistered, but a handkerchief may be laid between the ear and the part. To use the stethoscope successfully, it is necessary to press the chest-piece quite hard against the parts, an action which the animal resists. Applied to the chest, the object of auscultation is to discover sounds, normal or abnormal, in connection with the lung substance, pleura or bronchi. It also notes absence of sound and sounds conducted from other parts.

The class of normal sounds heard over the lungs are bronchial breathing and the vesicular murmur. Bronchial breathing is normal when heard in the middle and upper third of the chest. The respiratory murmur is normal when heard over the middle portion and less distinctly over the superior and inferior thirds. Bronchial breathing sounds like a moderate current of air passing steadily through a tube or out of the nozzle of a bellows. It is closely imitated by making the sound of the letter K in the roof of the mouth. It is best heard over the anterior part of the chest at the bifurcation of the trachea. In health, at the sides of the chest it is apt to be lost in the vesicular murmur. The vesicular murmur is a sighing sound. It may be plainly heard over the chest of bovine, or over the human chest. It is likened to the sound produced by the wind blowing steadily through green leaves. Bronchial breathing and the vesicular murmur are abnormal when heard in places other than in health. In pneumonia the vesicular murmur may be lost in the middle third and heard more plainly in the superior and inferior thirds of the chest. It then becomes an abnormal sound. Bronchial breathing is also an abnormal sound when it is heard plainly in the upper and lower third, and lost in the middle third due to blocking of that part of the lung with exudate. These two sounds may be increased or diminished in their normal situation. In pneumonia, one part of the middle third may be

blocked with exudate and the vesicular murmur lost in that part; but it will be found increased in other parts of the middle third not diseased.

We shall next consider the class of abnormal sounds known as rales. These are moist and dry. Moist rales are sub-divided with mucus, submucus and subcrepitant. Dry rales are divided into sonorous, crepitant and sibilant. The sonorous rales are heard over the large bronchial tubes in the middle and upper portions of the chest, in the first stage of bronchitis. The sibilant rale is heard in the upper and lower portions of the chest over the small bronchial tubes. It is a hissing sound. Bronchitis is a bilateral disease, hence these sounds may be heard over both sides of the chest, both on inspiration and expiration. The crepitant rale is heard in the first stage of pneumonia principally over the middle portion of the lung. It is a snapping sound and is closely imitated by stroking the hair of a cat in the opposite direction than it lies. We may not see our patients early enough to hear this rale. It is caused by the air rushing into the air cells and separating their walls which have become more or less adherent by the exudate. Mucus rales are a bubbling sound, heard in the upper portion of the chest on both sides. It sounds like minute bubbles due to blood, pus or serum, or an admixture of them. They are heard both on inspiration and expiration. If heard on the lower portion of the chest they are called sub-mucus rales. These bubbling sounds change their place as the material moves along in the bronchial tubes. The sub-crepitant rale is heard in croupous pneumonia. Here we have the exudate in the air cells changing with liquid. The air passing in and out gives rise to a minute bubbling sound. It is heard in the third or revolving stage of pneumonia, both on inspiration and expiration.

Other Sounds.—Gurgling sounds may be heard in the second stage of pneumonia. It is due to the movement of fluid in the large tubes, and heard on inspiration and expiration. It is heard at the anterior part of the chest over the trachea and bronchi. Another sound is *metallic tinkling*. It is heard over the chest and at the nostrils, in pleurisy. It is

heard during inspiration and expiration. It is not often heard at the chest. It is caused by drops of fluid falling into a collection on the bottom of the cavity. It may also be caused by the bursting of a bubble on the sides of a cavity, or by the imprisonment of a drop of water on the wall of a cavity. Metallic tinkling is pathonomonic in pleurisy.

Percussion is the process of striking a part with the tips of the bent fingers, in order to elicit sounds, upon the character of which depends the condition of the tissues underneath. It was discovered by Leopold Avenbrugger, a Vienna physician, who lived from 1722 to 1809. He practiced percussion only. He first began the study of sounds as indications of morbid character. The idea was introduced into France by Corvisart in 1821. Mediate percussion was suggested by Piorry in 1828. It is customary in percussion to lay the middle finger, or two fingers of the left hand, upon the part and stroke with the finger-tips of the right hand. Every physician has his own way of percussing. The striking should be a wrist movement, not a forearm movement. The blows should not be too heavy and be made with discrimination. To percuss well is an art which one can only become proficient in by long practice. Sounds elicited by percussion vary in intensity, quality, duration and pitch. Intensity means loudness; quality, the kind of sound; duration, the length; and pitch, the degree of sound. Percussion sounds are due to vibration of air in the air cells, and of the chest walls. Percussion on a healthy subject shows that the results are not the same on both sides of the chest. Over the plane of the upper third on the right side the sound is the same to the eleventh rib back. Over the middle third, on both sides, the degree of resonance is about the same from the sixth to the twelfth rib. Behind this it is dull on the right side and more resonant over the left side. On the lower third percussion is clear, back to the tenth rib, where it becomes more dull. On the left side, dullness is found over the thirteenth rib back. So in the middle portion we find increasing pulmonary resonance, and in the superior and inferior portions we find diminished pulmonary resonance.

Resonance is divided into two kinds, pulmonary and tympanitic. Pulmonary resonance is that obtained by percussing over a healthy lung. Tympanitic resonance is heard when there is air inside of a cavity. It is a ringing metallic sound when caused in this manner. In percussion, sounds are increased, diminished or absent. In the degree that it is diminished it is a dull sound. If absent it constitutes flatness. Flatness is due to effusion of fluid into a cavity. Pulmonary resonance is increased in left lung if the right one is closed. As the sound depends on the amount of air in the tissues when one part of the lung is blocked, adjacent parts will become more resonant. Pulmonary resonance is diminished when there is less than a normal quantity of blood present, or where there is exudate, or where there is an increased amount of blood in a part, as in congestion of the lungs, and in effusion into the interlobular connective tissue.

Having now considered the various methods of physical examination and described the physical signs afforded by them, let us give attention to a brief description of the morbid anatomy of the most common pulmonary diseases with the physical signs found connected with it. Then we shall see clearly how to make a differential diagnosis of these conditions.

Pneumonia.—This disease is divided into three classes: croupous, catarrhal and interstitial. Croupous pneumonia is the one we commonly meet. It is an acute inflammation of the vesicular structure of the lung followed by temporary blocking of the air cells with exudate and exclusion of air. In the first stage there is an increased amount of blood in the capillary vessels. This causes pressure on the air cells and diminishes their calibre; subsequently comes dryness, then secretion of plastic material blocks the air cells. The tissue becomes the color of liver, being engorged with bloody sero-fibrinous exudate. The third stage, or that of resolution, is marked by the material becoming milky white; there is now again some air in the cells. Absorption goes forward. The physical signs of croupous pneumonia in the first stage appear in about twenty-four hours. If the disease is anterior

or central it may take two or three days. *Inspection* notes diminished movement of the chest wall on the affected side. On both sides if it is double pneumonia; also the increased use of the abdominal muscles. Percussion in first stage gives some dullness of diseased part. Central pneumonia may not yield dullness until advanced to the second stage. *Auscultation* in first stage is not satisfactory until exudation has taken place. Then we hear the crepitant rale. It lasts but a few hours. *Inspection* in second stage shows the wall over the affected lung to be more quiet than in the first stage. Movement of the normal side increased. *Percussion* yields dullness over the diseased part of the lung while normal portions yield increased resonance. *Auscultation* in the second stage yields no vesicular murmur over the affected portion. The crepitant rale has disappeared and bronchial breathing taken its place. The more condensed the lung tissue, the plainer the bronchial breathing becomes. *Percussion* in the third stage yields less and less dullness until the exudate has been absorbed. *Auscultation* in this crepitant rale may be heard, then the sub-crepitant as the exudate becomes more liquefied, and finally the vesicular murmur returns. Should purulent infiltration set in the temperature remains high; the pulse is frequent and weak, prostration is marked, bronchial breathing continues; also dullness and percussion. A discovery of minute gurgling rales may complete the diagnosis. Termination in gangrene is known by great prostration or collapse. We look for the gangrene odor.

Chronic interstitial pneumonia or pulmonary tuberculosis in the horse is rarely seen, but may be in old horses. It may arise from the extension of an ordinary pneumonia. It is accompanied by formation of tubercle or caseous material.

Catarrhal pneumonia is always secondary, due to the extension of the inflammation from a previous bronchitis. Acute bronchitis is an inflammatory condition of a part or the whole of the mucous membrane of the large bronchial tubes. In the first stage we find congestion of the mucous membrane. It becomes dry and swells. In the second stage

we have a catarrhal exudate. The glands are enlarged, mucous membrane swollen and tubes constricted.

Auscultation in the first stage finds the sonorous rale. It is heard on both sides, both on inspiration and expiration. The sound is best heard over the middle third between the sixth and twelfth rib. The sonorous sound is due to the dryness of the tubes in connection with their diminished calibre. In the second stage, when the exudate is thrown out, we get a mucus rale, both on inspiration and expiration. The sound comes and goes. The secretion may or may not be expectorated. We may not always hear the mucus rale. *Percussion* in the first stage usually gives an increased resonance. In fat horses it is almost impossible to distinguish. In the second stage the change in resonance in percussion is slight.

In *capillary bronchitis* percussion yields increased resonance on both sides, in both stages, unless in old animals. There is auscultation, a mucus rale and hissing sound. In the second stage we find sub-mucus rale. Old animals may not be able to cough up the mucus which may block some of the tubes.

Asthma.—This morbid condition is a neurosis. It gives rise to paroxysms of dyspnoea at recurring intervals. It is probably due to constriction of the circular fibres of the bronchial tubes, which cause a wheezy breathing while the paroxysm continues.

Pulmonary Emphysema.—This is a condition characterized by loss of elastic power in the air cells. The walls become stretched and contain more than a natural amount of air. There are two varieties: the vesicular and the interstitial. In the former, the excess of air in the air cells; in the latter it is in the connective tissue between the cells. The tissues may become ruptured and the cells come together, thus forming large bladders. *Inspection* notes that the chest walls are enlarged. The abdominal muscles are brought into use in proportion as the disease has advanced. The expiratory movement is much prolonged, and consists of three parts. A movement, pause, then another movement. *Percussion* gives increased resonance over portions of the chest. *Aus-*

cultation finds a variety of sounds. In a general way we may say the sounds are of a crepitant, sibilant and sonorous character.

Broken Wind.—This name is applied to a condition of difficult respiration closely resembling that of pulmonary emphysema, a spasmodic breathing with a short inspiration and a prolonged and double expiratory movement. The malady is of nervous origin and asthmatic in character, lacking the recurring paroxysms, but exhibiting a more or less continuous dyspnœa. In this disease the structural changes have taken place in the circular fibres of the smaller bronchial tubes. This muscular fibre is in a state of constant contraction, having become paralyzed from continuous irritation of the nerve filament supplying the muscle. This irritation is of gastric origin. The integrity of the aveolar passage and air cells is impaired in time through innutrition. Degeneration follows with production of pulmonary emphysema.

Pleurisy.—This is an acute inflammation of the serous membrane lining the chest cavity, forming the mediastinum and covering the lungs. It may be partial or general. The first pathological character is congestion of the blood vessels of the pleura and the sub-serous connective tissue. At first the membrane is dry. This is followed by a fibre-serous exudate. The pleura becomes œdematous in patches. It becomes thickened, loses its polished appearance, becoming dull and rough. The fibrinous lymph of the exudate forms membranes or deposits on the pleura. The serous portion of the exudate falls to the bottom of the cavity. The false membrane may build up and form thick fibrous structures. These may be cartilaginous or osseous in structure. Such structures are raw and are not due to a simple exudate, but a proliferation of the cell elements of the pleura. The liquid exudate is absorbed by the lymphatics. *Inspection* in the first stage of pleurisy notes that the respirations are short and thick, especially the inspiratory act. Evidently the act of respiration causes pain. The abdominal type of breathing is increased. The chest is enlarged in the latter stage and may be unhyed. Auscultation in the first stage gives the friction

murmur, a sound similar to that obtained by rubbing together the palms of the hands. It is caused by the now swollen membranes coming in contact with each other in the movements of the lung. *Auscultation* in the second stage denotes loss of respiratory murmur in the inferior third of the chest and upwards in proportion to the depth of the effusion. *Percussion* in the first stage yields a slightly diminished pulmonary resonance, but dullness increases as the disease advances. Percussion over the effusion yields a flat sound. Above the fluid line there may be a semi-tympanitic resonance which will be referred to elsewhere.

Œdema of the Lungs.—This is a condition characterized by an effusion, serous in character, into the air cells and possibly into the surrounding connective tissue. It is a bilateral condition. It is a sequel of some debilitating disease. It may appear with congestion of the lungs. It happens suddenly. Inspection notes difficult but feeble respiration. There is no elevation of temperature. *Percussion* yields dullness. *Auscultation* may elicit moist rales.

Pulmonary Congestion.—This condition is caused by a sudden influx of an increased quantity of blood into the pulmonary vessels. Inspection reveals dyspnoea, frothy expectoration tinged with blood. Animal may appear excited or depressed. On *auscultation* the cardiac sounds are increased. On percussion there is loss of pulmonary resonance on both sides of the chest. It is a bilateral malady. Autopsy reveals the lungs deep dyed and crepitant.

Differential Diagnosis.—The differential diagnosis of these various diseases of the lungs has made itself apparent in what has been already said of them. It only remains to restate the distinctions in a concise manner.

Croupous Pneumonia in the first stage is distinguished from bronchitis in the same stage by the former having a crepitant and the latter a sonorous rale. In bronchitis there is no consolidation of lung tissue as in pneumonia. It is a bilateral disease. It yields mucus rales in the second stage and increased resonance on percussion. All these are the opposite in pneumonia. Croupous pneumonia is known from capil-

lary bronchitis by about the same signs as bronchitis. In capillary bronchitis we have in the first stage a hissing sound, the sibilant rale. Croupous pneumonia is known from pleurisy by the friction murmur of the latter in the first stage. In the second stage is flatness on percussion. The upward limit of this loss of resonance is bounded by a horizontal line. Pleurisy with effusion is a bilateral disease in the horse. In pleurisy we have the increased abdominal breathing and abdominal furrow.

Pneumonia is distinguished from asthma by one being febrile and the other a non-febrile disorder. Pneumonia is regular in its course. Asthma comes in paroxysms. Asthma is characterized by a wheezy breathing performed with much labor during the paroxysm. In pneumonia the breathing is panting in character.

A paroxysm of asthma is distinguished from an attack of congestion of the lungs by the wheezy breathing of the former. In asthma, on percussion, pulmonary resonance is greatly exaggerated, and auscultation yields an increase of the respiratory murmur and sibilant rales. These are of the opposite character in congestion of the lungs. There is little or no fever in asthma, and in a severe attack the animal coughs frequently. Asthma may be confounded with bronchitis in the first stage, but the high temperature of bronchitis and the congestion of the schneiderian membrane and conjunctiva will establish the difference.

Congestion of the lungs may be distinguished from the congestive stage of pneumonia by the latter having a very high fever and ushered in by a chill. Pneumo-thorax, or air in the chest cavity, may be distinguished by well marked tympanitic resonance on percussion. It must not be confounded with the condition that sometimes exists in pleurisy or pneumonia that gives rise to a diminished tympanitic resonance. In pneumonia a tympanitic sound is transmitted through a portion of consolidated lung on heavy percussion in some rare cases. It is supposed to be caused by the vibration of air in large bronchus or in a cavity. Again, in pleurisy with much effusion, we find a tympanitic reso-

nance above the fluid line. It may be caused by relaxation of the air sacs and diminished tension of the lung tissue. Finally, there is no royal road to physical diagnosis. Its problems must be worked out for oneself

Originality is not claimed for this paper. The ideas are modified from personal experience, observation and mode of expression. My object has not been so much to teach as to refresh you in the matters which above all others combine to make the successful diagnostician.

REPORTS OF CASES.

DISEASE OF THE HEART.

CASE II.

ACUTE ENDOCARDITIS OF THE HORSE—RECOVERY.

Written for the AMERICAN VETERINARY REVIEW by J. A. COUTURE, V.S., Quebec.

Practitioners cannot be enough on their guard concerning the diagnosis of diseases of the lungs of all domestic animals, but specially horses and dogs, for they are very apt to take diseases of the heart for those of pulmonary organs. Acute endocarditis, hypertrophy, heart failure may easily be mistaken for diseases of the lungs when the practitioner does not always bear in mind that such errors are liable to occur.

This case is interesting because it illustrates the above remarks and because of its severity and recovery.

History.—The patient is a bay mare, half Clyde, 6 years, 15 hands, 1,300 lbs., used on the bus of the Florence Hotel of this city. She had been bought at Montreal about 2 months ago, and it is very likely that she has done very little work yet. Has always been in good health since she is here. She is worked very hard and very fast. On the 16th of August, 1893, she works as usual and seems all right; the next morning refused her feed and could hardly follow her mate on the bus. She is brought to the hospital at noon the 17th of Aug.

Clinical examination.—Temp. $106\frac{1}{2}$, respiration 20, pulse 75, small, quick. She does not look very sick; coughs a little; visible mucous membranes are about normal, though the conjunctiva is rather yellowish.

Auscultation and percussion.—Nothing abnormal on the right side; on the left side absence of vesicular murmur, opposite the whole anterior and medium parts of the lung; dull sound to percussion of those parts; but the most attentive auscultation does not reveal the presence of *crepitating rale* (rale crepitant humide).

Diagnosis doubtful, but probably *right pneumonia*. That was a mistake, and I confess that such an error should not have been committed. I will explain it by saying that I was in a hurry, that I neglected to explore the heart (there are two modes of exploring the chest, one used for respiratory organs and the other for cardiac diseases. I will have an opportunity in the near future to be more explicit on the subject). The color of the mucous membranes, the absence of crepitating rale and the very high temperature were, it is true, negative symptoms; but, on the other hand, the frequent breathing, the absence of respiratory murmur and the cough lead me to think that *it might be pneumonia*. I insist on these points because I am of opinion that the confession of an error, or of failure in treatment, is as productive of good results to *confreres* as anything else.

Treatment.—Antifebrine, $\frac{1}{2}$ ounce doses every 6 hours.

August 18th.—The next morning my patient is much worse. Pulse 90, very small; respiration 20; temp. $106\frac{1}{2}^{\circ}$. Refuses all food; great prostration; chest is again explored for pulmonary disease. Dull sound at percussion, of a very large surface of the lung, even larger than the day before, no crepitating rale and no vesicular murmur. I am rather puzzled and can form no opinion yet of the case; I begin to believe that there is no disease of the lungs. A large and strong sinapism is applied to belly and chest and the patient is left alone till 5 p. m. At 5 p. m. that day she begins to perspire profusely, such perspiration that I have never seen anything like it before or since; the perspiration is falling to the ground as if the patient had been dipped in water. Not much importance was attached to the fact as I attributed it to the sinapism. The patient has eaten nothing since noon the day before.

August 19th.—Very bad. Temp. 106° ; pulse nearly imperceptible; complete immobility; takes absolutely no food. Exploration renewed; dull sound opposite two-thirds of the surface of the left lung; the beatings of the heart are violent, strong; the first shock is accompanied by a strong bellowing sound (*bruit de souffle*); the first shock of the heart is double. The beatings of the heart and the bellowing sound can easily be heard as high as near the vertebræ and over at least two-thirds of the horizontal surface of the chest. At the right side both the cardiac beats and the bellowing sounds are also heard on a large surface.

The diagnosis is easily made then; it is a case of *acute endocarditis*. Had I explored the chest for cardiac disease at the first examination, or at least at the second, I would have easily made a correct diagnosis, whilst on account of not having done so it was only when the symptoms of the disease were too prominent that I discovered its true nature.

Prognosis.—Fatal. Here again I was mistaken, for the patient made a good recovery.

Treatment.—It consisted of salicylate of soda, 4 drachms; digitalis in powder, 15 grs., twice a day; alcohol, 1 ounce, every four hours with 4 ounces of water. A very peculiar circumstance of the case is the extremely profuse perspiration which began at 5 p. m. on the 18th of August and lasted continually till late during the night of the 20th, and ceased only during the day of the 21st. The temperature at 8 p. m. the 19th is 105° ; no food has been taken during the day; absolute immobility.

August 20th.—Temp. $105\frac{1}{2}^{\circ}$; pulse a little stronger; great prostration, can hardly stand, refuses all food; perspires all day.

Same treatment.

No change is noticeable in auscultation.

August 21st.—Perspiration continues, but less profuse; temp. 105° ; pulse as yesterday; eats nothing yet. The cardiac beats are not so strong and not audible on so large a surface. Towards the evening the perspiration decreases; she dries up except under the belly, on the neck and in the flanks.

Same treatment.

August 22d.—Morning. Temp. $106\frac{1}{2}^{\circ}$. Heart beats even more violently than ever before; extreme prostration; at noon, temp. 106° ; at 6 p. m., temp. $105\frac{2}{5}^{\circ}$; at 11 p. m., temp. $104\frac{4}{5}^{\circ}$. The beatings of the heart have decreased gradually in strength, so has the bellowing sound, at 11 p.m. she is dry and she eats a little oats. The alcohol, salicylate of soda have been kept on, but the digitalis powder has been discontinued since last night.

August 23d.—Morning temp. 105° . The heart-beats become gradually less violent, the bellowing sound (*bruit de souffle*) has disappeared. She takes a good feed of oats and some hay. I consider the crisis over.

Temperature at 11 a. m., 104° ; resp. 18; pulse stronger, 80 per minute.

Temperature at 6 p. m., 104° ; resp. and pulse as at 11 a. m. Same treatment.

August 24th.—Morning temp. 104° ; pulse 60 and strong enough; resp. 15. The most careful auscultation reveals no (*bruit de souffle*) bellowing sound. The cardiac-beats cannot be heard on the right side; they can be heard only on the left side if auscultated especially for cardiac diseases.

August 26th to September 3d.—The temperature keeps to 102° ; pulse 50, good; resp. 12. Appetite good, the animal eats everything that is put before her. She is allowed all the oats she can eat and presently takes from 15 to 16 lbs. a day. Notwithstanding this she is still very weak, can hardly move in her box without being supported. There is no reason to be surprised at that considering the crisis through which she has taken no food (from the 17th in the morning till the 22d at night). Since the 26th she is administered twice a day: iodide of potassium 1 drachm, salicylate of soda 2 drachms, pulv. digitalis 15 grs.

From the 3d to the 18th of September.—Temp. 100° ; pulse 42; resp. 12. Appetite very good, eats 18 lbs. of oats a day and all the hay she can; cardiac beats normal, but a slight (*bruit de souffle*) bellowing sound is heard to the left when auscultated especially for heart disease. She gradually gets stronger and lively.

September 20th.—She returns to work apparently cured, but careful auscultation reveals yet the bellowing sound at the left side. It is very likely that this animal will remain, for a time at least, if she is worked as before, with a slight alteration of the mitral valves. The owner is notified to either spare her or get rid of her. He sold her a few weeks after and I lost sight of her. I have selected this case, amongst the many others in my note-book, on account of its being typical. Of course, acute endocarditis does not always present itself with such severity and is sometimes quite difficult to diagnose, unless the practitioner is always on the look out, which is improbable. This is true notably in the horse and dog when it is easily mistaken for pneumonia. But with a little attention and care in examining the patient, in making a rule to never let a supposed case of pneumonia pass before the heart is examined, in taking into account the color of the conjunctiva, the nature of the pulse, the elevation of temperature and the clinical analysis of the symptoms revealed by exploration of the lungs, the mistake can be avoided.

DEATH FROM HEART FAILURE.

By W. H. DALRYMPLE M.R.C.V.S., Baton Rouge, La.

The subject of the following short record was a five-year-old bay harness gelding standing 15.3 or 16 hands high.

I was called to see him at 10 o'clock, on the morning of May 10 last. Found his temperature $106\frac{2}{5}$ F. Pulse quick and frequent (number of beats not recorded) but did not notice any irregularity or intermittency. Respirations hurried (number not recorded). Expansion very slight in right wall of chest. On auscultation, finer sounds lost, larger bronchial sounds audible. Pneumonia treated for, the details of which need not be repeated here.

At 6:30 P.M., temperature 106 F.; at 9 P.M., temperature $105\frac{4}{5}$ F.

On May 11th, at 6:45 A.M., temperature 104 F.; 3 P.M., $104\frac{4}{5}$ F.; 6 P.M., $104\frac{1}{5}$ F.; 9.30 P.M., $104\frac{1}{5}$ F.

On May 12th, at 7:30 A.M., temperature $102\frac{4}{5}$ F. At 11-

A.M., the owner's wife hearing the horse nicker as if wanting something, gave him a saucerful of sugar, which he licked up with avidity. Ten minutes later, the coachman came to the house and reported the horse dead. No one could have been more surprised than myself. So far as the pulmonary symptoms were concerned the animal was progressing as favorably as could be expected. The first thought that crossed my mind was, could he have been asphyxiated by the sugar forming with the saliva a coagulum in the throat, but there were no signs of expectoration nor even a struggle, the horse was lying just as he had dropped. I then of course thought that so sudden a demise must be due to heart-failure, but considered it singular that I was not made suspicious of it by the character of the pulse.

About three hours after death I made a post-mortem examination, but as the facilities and surroundings were of the most unfavorable nature I did not make as careful work as I would have liked and for which I afterwards felt extremely sorry.

As indicated by the ante-mortem symptoms, the right lung was affected. The *heart*, however, exhibited the most interesting pathological condition, and it is on this account that I considered a brief record of the case would be of some interest to the readers of the REVIEW.

On making longitudinal and transverse incisions into the cavities on each side of the heart, I had presented to me the fibrino-fatty coagula (seen in the illustration) one on either side passing from the auricle through the auriculo-ventricular opening to the ventricle. One of the coagula seemed unattached, and which I simply lifted out of its position, the other was very slightly adherent by its upper extremity. The illustration shows the specimens denuded of blood-clot and considerably shrunken from being in alcohol, and although I did not take the weight, the dimensions can be fairly estimated by the measure placed on one side.

I regret very much for my own sake, and that of others, that the meagreness of the only description which I am able to give of the whole pathological condition, is due to my not



making a careful examination of the valves and the interior of the heart generally. No doubt there must have been extensive endocardial lesions to produce such enormous deposits. How the animal existed in apparently good health for a considerable length of time, which he seems to have done, under such conditions is, to say the least of it, somewhat astonishing. The valves must have adapted themselves to the neoplasms so as to in a measure perform their functions. The lung affection was in my opinion secondary to the cardiac and brought about by overexertion, and the blood being partially dammed up in the lungs by the coagula preventing its free flow from these organs. The coagula were both organized and had undergone fatty degeneration, showing that they must have been in existence for some time. I had hoped to be able to get a microscopic section of the tissue, but have failed to do so in time.

To me this case teaches a valuable lesson. That in all subjects with pulmonary trouble, the rule should be to auscultate the cardiac area, not that this animal's life could have been saved by so doing, but the client could have been made aware of the probability of such an unfavorable termination before the cause was revealed on post-mortem. I think that, whenever practicable, autopsies should always be made; they are invaluable to the practitioner by laying bare plain facts which often upset stereotyped theories, point out our shortcomings and add to our general knowledge, besides frequently bringing about a substantial saving to our client, as in this case—the horse was in his owner's possession for only ten or twelve days—having "posted" him. I was able to give my certificate that the animal died from the condition of the heart above alluded to, which must have been in existence long before he was last purchased, with the result that my client had the half of the purchase price refunded. Had the post-mortem not been made, it would most likely have been presumed that the horse died from pneumonia, the owner would have lost the full price, with my fee added, which latter I may state was also refunded by the dealer.

ŒSOPHAGOTOMY IN A THREE-YEAR-OLD FILLY.

By JAMES M. REED, V.S., MATTOON, ILL.

On June 12, 1893, I was called to the residence of Lewis F——, a liveryman, about dark. Upon arriving found my patient badly choked, having been in this condition about six or seven hours. She had given up her struggling endeavors to remove the obstruction, which was located about half way between the jaw and point of shoulder in the œsophagus. I tried to remove the impaction by every possible means of administering fluids, but all attempts failed. By consent of the owner I adopted œsophagotomy. Casting the filly on her right side, and with two assistants, one at the head, the other at the rope, I proceeded with the operation, the assistant at the head straightening the head out and holding it on the ground, or bed of straw.

I first opened the skin with a hooked knife, about two and one-half inches long, and then cutting down on to the œsophagus with the hooked knife, and found a finely crushed cob which seemed to be quite dry. Owing to my patient being very restless, I was forced to pick it out with my fingers, small particles at a time, the gash in the œsophagus being about two inches long. After the obstruction was completely removed I sewed up the wound in the œsophagus with catgut and then washed out the wound with antiseptic solution, sewed up wound in skin with linen thread and, removing the hobbles, the filly arose to her feet and I gave her some water, of which she drank two or three swallows freely. I tied her up in a box-stall for the night, and left orders to allow her no food but gruels, with small doses of potassium nitrate once a day. I washed the wound once a day with corrosive sublimate solution, and applied the following ointment: terebinthinæ vulgaris, aqua ammonia, of each $\text{ij}\overline{3}$, olium lini $\text{xij}\overline{3}$, applied night and morning, after washing.

June 14th. I saw the patient; temperature 102° , pulse slightly raised, respiration slightly raised; drank gruel freely, the wound slightly swollen.

June 16th. Saw patient; temperature 101° , pulse normal,

respiration normal ; drank gruel freely ; wound began to discharge ; gave internal treatment as before, external application same.

June 19th. Saw patient ; temperature, respiration and pulsation normal ; swelling going down, drank gruel freely ; wound healing nicely, and stopped medicine internally.

June 22d. Patient appeared lively, drank gruel, and wound rapidly healing.

I did not see patient until July 10, when the wound was completely healed and filly had been eating her regular food that day, for the first time. I discharged the patient from treatment with instructions to feed carefully for a few days.

This operation was performed after night with the light of one lantern on June 12th, 1893.

AZOTURIA.

By H. C. TERRY, D.V.S., Bristol, Bucks County, Pa.

As I have never written on any subject for the REVIEW, will endeavor to do so now ; as I had a very peculiar case of azoturia in a very peculiar place—in a meadow with no shelter, with the exception of a kind of tent we built over him one night when it rained. Was nearly a half mile from any buildings.

The case was a bay gelding, twelve years old, 15.3 hands high, weighing about 1,200 lbs.; used for towing boats on a canal. He came down three days previous to his taking ill, and was stabled, receiving his regular amount of food three times a day. Was taken out on the evening of the third day and started up the canal. He soon became lame in one hind leg, which lameness, after a short distance, changed to the other leg, and afterwards disabling him from travel at all ; so he dropped. This was about 9 P.M., on May 18, 1895.

I was called early the next morning ; found the pulse and respiration accelerated ; membranes of the eyes and nose congested, having a brownish tint ; muscles of the loins rigid ; urine high colored ; slight convulsions ; animal trembling somewhat, and diagnosed azoturia. I prescribed potassic

acetatis and fl. ext. buchu each ℥ij with spts. aeth. nit. ℥iv to be given in ℥iv doses every four hours. We were nearly a half mile from any buildings, as I said before, so it was impossible to get hot water for fermentations. Fortunately, I had some mustard with me, and plenty of water to mix it for we were along the canal. I applied it to his loins.

Ordering some straw and blankets after catheterizing my patient, I left to return in the afternoon, when I found no particular changes. Administered Oj ol. lini. The diuretic treatment was kept up to the end, but after the second day ℥i more of nitre was added to the mixture, giving the same sized doses every four hours, with a pint of linseed oil every second day. There he laid for six days, being catheterized twice daily; turned from side to side three times, daily; received his medicine every four hours, night and day. All this time he would eat and drink, but gruel or bran mash were all that were given him. He regained his feet (for the first time from the time he dropped) on the evening of the sixth day, seeming much better. Since this date he has been improving (but it took a long while to heal the bed-sores, as you can imagine), until now he is being driven to a milk-wagon, and is all right with the exception of a spot on each hip where the hair has not grown in.

I thought this a very hopeless case after the third day; in a meadow, too, very damp, in the month of May; but I still kept on the treatment before mentioned, and am very glad he recovered, for I was a new business man in the place and it did me lots of good.

CASTRATION OF A LION.

By J. G. SLEE, Student American Veterinary College.

The subject, a Nubian lion, five years old, in Bentley's circus—operator, Dr. A. Shirk. The castration of our domestic animals is always an interesting operation to the student. The results can in a measure be definitely foretold, and any complications resulting readily treated. But when it comes to the "king of beasts" the operator must antici-

pate his results, his patient not being as readily secured and treated afterwards.

His highness having been firmly tied with ropes and chains in a manner safe to operator and patient alike, the doctor performed the operation, using the ecraseur and taking all the antiseptic precaution necessary.

The tunica vaginalis was found to be closely adherent to the testicle, and the spermatic cord unusually large and vascular for the size of the animal.

The severing of the cord was done very slowly, to avoid any profuse hemorrhage. The patient is doing well, and, like all the feline race, takes care of himself.

EXTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

THE INTRA-TRACHEAL INJECTION OF IODINE IN PURPURA HÆMORRHAGICA.

By W. H. BLOYE, F.R.C.V.S., Plymouth.

In consequence of the generally improved hygienic condition under which horses in towns now as a rule live, cases of purpura hæmorrhagica are by no means as frequent as they were ten or twelve years ago, and the opportunities of testing new remedies have, of course, become proportionately rare.

In view of the frequently unsatisfactory results of all the older methods of treatment, in which category I include iron, turpentine, chlorate of potash, and even iodine, per orem, and further of the circumstantial account of Schaumkell's successes with the Dieckerhoff treatment quoted in the article translated by Mr. J. A. W. Dollar, I had at the time of reading this article determined to try the treatment at the first opportunity. Contrary to custom, the opportunity soon occurred. It has been my good fortune, chiefly perhaps as the result of a severe outbreak of influenza, to encounter four cases of purpura in little more than as many months—three of them concurrently. I adopted this method of treatment,

and the experiment has proved a most encouraging success, a success which, when added to that of Mr. Forgham, detailed in *The Record* of February 10th, cannot fail to be gratifying to Mr. Dollar.

In the cases recorded below, the intratracheal injection of iodine acted almost as a specific, indeed to such an extent that after the initial attempt—granting the surroundings to be as they should—one got to feel absolutely confident that the second dose would produce a beneficial effect, be the swellings and petechia of whatever intensity.

Case I.—A grey cob gelding, five years old, admitted July 23d, 1894. Head, limbs and abdomen all greatly swollen; petechia on schneiderian large and very dark, discharge of blood-stained serum from both nostrils; temperature 104.5° F., appetite nil. Gave an experimental draught composed of ol. tereb, tr. ferri perchlor., and ol. lini.

July 24th, 8 A. M.—Swellings more marked, especially about head, face and mouth, the greatly enlarged nostrils causing a very loud snore. Temp. 103.6°. Injected 6 drachms iodine solution into the trachea. (The whole of the injections above referred to are intra-tracheal.)

8 P. M.—Swellings generally move extensive, horse can scarcely be got to move, temp. 104°. Injected 18 drachms iodine solution.

July 25.—Swellings somewhat smaller and considerably less tense, breathing better, temp. 103.4°, drank milk and eggs freely. Injected 14 drachms iodine solution.

July 26.—Swellings greatly reduced, horse generally better, although during the day the temperature reached 104. Gave quiniæ sulph. one drachm and ferri sulph. two drachms in a ball, morning and evening.

July 27th.—Swelling returning. Injected iodine solution 12 drachms, and gave ball as above.

July 28th.—Considerably better. Gave balls containing iodine, iron and quinine, morning and evening.

July 29th.—Œdema again returning. Injected iodine solution, 8 drachms morning and evening.

July 30th.—Horse considerably better. Injected iodine

solution 6 drachms, and gave a quinine and iron ball. During this day a large slough came away from the horse's sheath. The animal was inclined to feed.

July 31st.—Horse greatly improved, moves freely, swellings almost disappeared; appetite much better. Up to this point he had almost entirely lived upon milk and eggs. During the next ten days the treatment was purely tonic and restorative, and at the end of the period alluded to the patient, which had then progressed most rapidly, was discharged convalescent.

Case II.—A bay harness mare, 10 years old, was the most severe of the quartette. When first seen on December 8th her head and limbs were enormously swollen. Serum was oozing from the nostrils, angles of the mouth, armpits and inside the thighs. She was moved only with the greatest pain and difficulty. I do not propose to repeat a daily record, as case I. gives a fair type of the action of the treatment under consideration, but it may briefly be stated that during her treatment this patient's temperature reached 106,° pulse 90, respiration 70.

On December 14th, six days from the commencement of the attack, the mare got a most acute attack of laryngitis and threatened suffocation. (Lest any skeptic should attribute this to the iodine, I would say at once that it occurred as the result of the box door being left accidentally open while a bitter east wind was blowing, and, further, that during the injections the animal's head was always supported on a man's shoulder until one felt sure that absorption had taken place. Beyond this it may be added that we have on occasion purposely lowered the head immediately after giving the last syringeful, the small quantity of solution then returned through the nostrils occasions only slight cough and inconvenience). I performed tracheotomy and inserted a tube. Independently of its immediate effect this operation subsequently saved the animal a considerable amount of annoyance, in that the whole of the remaining injections were given through its opening. This patient received in all 13 injections, in quantities varying from 8 to 18 drachms, administered

two daily at the commencement and one daily afterwards. Tonic treatment similar to that of case I was continued until December 29th, at which date the animal had made a good recovery.

Cases III and IV differed only from the preceding in their severity, their treatment being essentially similar. The latter received 5 injections, the former 15. The apparent anomaly in regard to the number of injections required by case III is explained by the fact that this animal was primarily stabled upon a quay, near which was a large sewer outlet, and where always at low tide was an acre or so of stinking mud. The owner was at first greatly disinclined to have his horse removed, but after two relapses readily consented.

The whole of these animals are now at work. It is perhaps worthy of remark that only case IV had received any treatment for influenza, the others had been allowed by their owners to take their chance until the purpura was noticed.

The solution used throughout was of the strength recommended in Mr. Dollar's article, viz., iodine one part, iodide of potassium five parts, water 100 parts. When carefully and slowly injected there is rarely any cough, and during the operation the patient frequently seems to be soothed almost into sleepiness.

I have endeavored only to give a bare outline of the treatment pursued, but it should be mentioned that careful nursing always played a prominent part in it. Milk and eggs were given very freely, and at the commencement supplied the staple subsistence. Warm supporting bandages were always put on the limbs and carried as high up as possible.

I gather from the experience gained in these cases that three or four large doses of iodine solution injected consecutively are more permanent in their effect, and hence more likely to prevent the relapses which are so frequent in this affection, than are five or six equally large doses given intermittently with small ones, or with any other medicine administered in the usual way.

A notable feature, too, is that fairly large doses of iodine, given either as pure iodine in a ball, or in any of the liquid

forms in a draught, are comparatively ineffectual when compared with the drug administered through the trachea.

A minor consideration is the corrosive action of the iodine upon one's syringe. If my belief in the future is warranted, a non-corrosive syringe (possibly of vulcanite) will become a desideratum.—*Vet. Record*.

COCAINE—ITS THERAPEUTICAL USES AND TOXICOLOGICAL EFFECTS.

In the March issue of the *Journal of Comparative Pathology and Therapeutics* Mr. F. Hobway published a long and excellent article on the above subject, where he reports a large number of experiments which he has made in studying the numerous and various effects of cocaine in the horse, dog and cat.

From the ninety-nine cases upon which he has experimented, he arrives at the following conclusions:

1. Cocaine hydrochlorate is a drug whose therapeutic value in certain cases is unquestionable, but its use on all animals is attended with danger unless proper care is taken to estimate the amount which can be used with safety.

2. It is a drug which can readily be absorbed from subcutaneous, serous or mucous tissues, and it is of value as a local anæsthetic in surgery and in certain affections of the stomach.

In surgery there is danger of interference with the operation if too large a dose (although not toxic), be given, on account of the violent involuntary clonic spasms of the voluntary muscles.

3. The doses which can be used with effect and at the same time with safety are:

For the horse, subcutaneously, not more than ten or eleven grains.

For the dog, subcutaneously, not more than two grains of cocaine hydrochlor., if about the size of a fox terrier, or four grains, if of the size of a collie. By the mouth, the toxic dose is much larger, but the purpose is effected by doses varying from one to four grains.

In cats, and delicate breeds of dogs, much greater caution must be used, and certainly not more than from one-half grain to one grain can be employed, subcutaneously, with safety, whilst by the mouth, the same dose is also advisable and can be repeated every four hours for at least three or four times. (One grain of cocaine is almost the same as mxxx of a four per cent., or mx of a ten per cent. aqueous solution).

4. The first symptom of danger is great uneasiness, followed by a violent involuntary clonic spasm of the voluntary muscles of the body, particularly noticeable in the muscles of the jaws and limbs.

5. If a diseased condition of the heart or lungs (particularly the latter) be suspected, much greater care must be observed and the minimum doses allowed.

6. The anæsthetic effect is manifested only locally and does not extend to the deeper tissues. It only extends around the seat of inoculation for a space varying from one-half an inch to an inch and one-half.

This local anæsthesia is manifested in from three to five minutes and lasts about twenty to twenty-five minutes.

7. Toxic doses, subcutaneously, allowing for idiosyncrasies are: for the dog, from grs. iii. (for an animal of the size and weight of a fox terrier) to grs. vi. (for an animal the size of a collie); for the cat, from grs. ii. to iv.

If a large medicinal dose or a toxic dose be given, the symptoms produced are: in a few minutes (2 to 4 minims if subcutaneously given) the animal becomes unusually quiet unless disturbed; there is constant licking of the lips (a peculiar smacking sound very frequently can be noticed), increased flow of thin watery saliva, which collects at the back of the pharynx and around the lips (dribbling from them, sometimes interfering with the act of respiration and causing constant gulping and apparently a choking sensation). The animal is very sensitive to all sounds and very attentive when spoken to; the ears are alternately pricked up and moved backwards and forwards; this hyperæsthesia may amount even to frenzy, and the animal may strangle itself at the end of the cord or chain by which it is secured, by con-

stantly twisting round and so shortening it. Again, this will sometimes cause (in the dog) the animal to make attempts to hide itself. The next stage is uneasiness, followed by very violent clonic involuntary spasms of all the voluntary muscles of the body, particularly noticeable in those of the jaws and limbs. These spasms commence in from ten to twenty minutes after an overdose has been given; although, if a large toxic dose has been administered they will appear as soon as two or three minutes. The spasms occur about every fifteen seconds and rapidly exhaust the system; the animal appears to be quite unconscious.

9. Hypodermic injections of morphia or amyl-nitrite certainly diminish the violence of the spasms, but are not actual and safe antidotes.

10. The effect on the respiratory centre is first to stimulate it, causing accelerations, then to depress and paralyze it. On the circulatory system the effect is not very violent, the pulse being only somewhat slightly increased in frequency; the heart continues to beat for a short time after the respiratory movements have ceased.

11. On the brain and nervous system the effect is very marked, being first that of a stimulant and then that of a depressant and paralyzer.

12. The action of the sensory nerves is much increased, whilst the effect on motor tracts is not to be forgotten.

13. The effect on the body temperature.—Toxic doses very markedly increase the temperature, in some cases even as much as 3 or 4 degrees; this is not constant or persistent, as in some cases it will be observed that the temperature falls again, even below normal.

14. The effect on the pupil of the eye is that of a mydriatic, but unless a large dose be given the mydriatic effect is not very well marked in the dog; in the cat it is much better seen.

15. On the skin, its action in toxic doses is certainly that of a diaphoretic.

16. On the salivary glands and the secretions of the mouth both medicinal and toxicological doses in the dog produce

markedly increased action. This is apparently increased by the violent clonic spasms of the muscles of the jaws.

17. On the sphincters of the bladder and rectum, its effect is not well marked in the dog or cat; increased peristalsis in the horse is, however, distinctly marked.

18. Locally applied, it has no irritant action, nor does it leave any trace.

19. On the voluntary muscles toxic or excessive doses have the effect of producing violent clonic spasms.

Medicinally, cocaine is of use; *internally*, as a gastric sedative in cases of persistent vomiting and in cases where it is desirable to produce a temporary loss of appetite; *subcutaneously*, as a local anæsthetic, an aid to diagnosis in some diseases and for certain surgical operations, and as a nerve stimulant; *externally*, as a local anæsthetic and as an anti-galactogal in cases where there is congestion and pain in the mammary glands. Death is produced either by exhaustion or by paralysis of the respiratory centre and respiratory arrest; it may occur from five to ten minutes or from five to six hours, according to the amount given.

Fresh solutions, not more than ten days old, are only to be used, as otherwise the results are often disappointing.

SOCIETY MEETINGS.

NEW YORK STATE BOARD OF VETERINARY EXAMINERS.*

The second meeting of the Board of Veterinary Examiners, Regents of the State of New York, was held in New York, Friday evening, September 6th,—the entire Board present: Professor Law, President; Dr. W. H. Kelly, Secretary; Drs. Hinkley, Huidekoper, and Morris. After consideration of the colleges to be recognized by the Board of Regents of New York State, it was unanimously decided that

*We copy the above report from the October number of the *Journal of Comparative Medicine and Veterinary Archives*. Why the REVIEW did not receive the official report of the secretary is not known to us. Has the Board added "prejudice" to "bias?"

the following are properly equipped and give the necessary three-years' instruction by a full staff of veterinary instructors:

The New York College of Veterinary Surgeons, New York City.

The American Veterinary College, New York City.

The Veterinary Department of the University of Pennsylvania, Philadelphia.

The School of Veterinary Medicine, Harvard College, Boston, Mass.

The McKillip Veterinary College, Chicago, Ill.

The Veterinary College at Ames, Iowa.

The School of Comparative Medicine of McGill University, Montreal, Canada.

All veterinary colleges under government control in the continental countries of Europe.

All veterinary colleges in Great Britain and Ireland whose students are licensed by the Royal College of Veterinary Surgeons.

The Board then proceeded with the selection of questions for the first examinations, September 24th to 27th, at New York, Albany, Syracuse, and Buffalo, which were placed under seal and forwarded to the Board of Regents.

W. H. KELLY, Secretary.

KEYSTONE VETERINARY MEDICAL ASSOCIATION.

The September meeting of this Association was called to order by President Lintz, at the office of Dr. W. H. Hoskins, Tuesday evening, September 17, 1895, when Hoskins, J. R. Hart, Lintz, Rhoads and McAmbly answered roll call. A communication from Dr. Bridge was read expressing regret at his inability to be present, having been called to Robersonia.

Dr. Hoskins, as chairman of the Legislative Committee, reported very little excitement since our last meeting, as the State Veterinarian or the Board of State Veterinary Medical Examiners had not been appointed.

At the request of the Treasurer and Secretary, the Presi-

dent appointed Hart and Hoskins a committee to audit the books for the past year.

Dr. J. R. Hart, who was the Association delegate to Cresson, gave a very interesting account of the meeting, which was very entertaining and instructive, and worthy of a much larger audience, as the papers read were of a high order.

Dr. Hoskins, as delegate to the Des Moines meeting, credited it with being the largest convention the Association had ever held. He gave a glowing account of the reception and entertainment offered at Chicago. This, with his full though concise description of the meeting, banquet, etc., made the mouth of the poor stay-at-home water, practically as well as figuratively speaking, and they all determined their watchword for next year would be "On to the national meeting."

The meeting adjourned to meet Tuesday evening, October 8, 1895, at Broad and Filbert streets, when officers for the ensuing year will be elected.

The October meeting of the Association was called to order by President Lintz, at the new and more commodious quarters on the northwest corner of Broad and Filbert streets, Tuesday evening, the 8th inst., at 8:30.

The change of location was made imperative, as the increase in attendance both of members and visitors had outgrown the very pleasant environments of Dr. Hoskins' office.

The members present were Drs. F. Bridge, H. Eves, Chas. T. Goentner, W. H. Hoskins, J. R. Hart, W. S. Kooker, Chas. Lintz, W. L. Rhoads and L. Pearson. Dr. Allen was also present.

Dr. Hoskins, as chairman of the Legislative Committee, reported having received several communications from veterinarians now located in other States who wish to locate here and write to learn what laws they must comply with.

Dr. Hart, as chairman of the Auditing Committee, reported the accounts satisfactory and the treasury in a position to pay a dividend. The revision of the Constitution and By-Laws to better meet the present and future needs of the Asso-

ciation was now considered, and after considerable discussion it was adopted as revised.

Dr. Hoskins read a very interesting paper entitled, "What I have Learned in Associations"; he thus brought out many pungent truths which more clearly portrayed the inestimable worth of the Association as a factor for the advancement and protection of veterinary science, also the personal advantages to the individual member.

Dr. Eves reported a case of excessively contracted flexor tendons in colt, one month old; this elicited considerable discussion and much valuable information.

Dr. Allen cited a case of farcy which had been tested with malleine; he promised to give a detailed account of it at the next meeting. This brought into discussion the reliability of malleine as a diagnostic agent; it was maintained by a majority present that on account of the variations in its manufacture it was not as a rule absolutely satisfactory, while tuberculine was held in higher repute than ever before, Prof. Nocard claiming a universal accuracy, while the Massachusetts Commission claim less than one half per cent of mistakes with its use.

This being the annual meeting the nomination and election of officers for the ensuing year was now in order. There being but one nominee for each office, the secretary was instructed to cast the ballot and the election was declared unanimous as follows: President, John R. Hart; Vice-President, W. S. Kooker; Treasurer, F. Bridge; Secretary, W. L. Rhoads; Directors, H. Eves, C. T. Goentner, Chas. Lintz, L. Pearson, W. H. Hoskins.

After the new officers had assumed their duties the meeting adjourned to meet at the same place, Tuesday evening, November 12, 1895.

W. L. RHOADS, Secretary.

MONTREAL VETERINARY MEDICAL ASSOCIATION.

The twenty-first annual opening meeting of the Montreal Veterinary Medical Association was held in the library of the Faculty of Comparative Medicine, on Thursday evening, October 10, 1895, with the President, Dr. Adami, in the chair.

There was a good attendance of members and candidates for admission.

Minutes of last meeting were read and approved.

The special business of the meeting was the election of officers for the ensuing year. The honorary president, Dr. D. McEachran took the chair and the ballot resulted in the election of the following: President, Dr. M. C. Baker; 1st Vice-President, Dr. N. D. Gunn; 2d Vice-President, Mr. E. C. Thurston; Secretary-Treasurer, Harri H. Dell; Librarian, Mr. J. A. Ness.

Fourteen new members were added to the roll and Dr. Martin, professor of pathology, was elected to honorary membership.

Dr. Adami referred to the admirable condition of the library, which was largely due to the zeal and energy of Mr. Thurston, the retiring librarian.

A Reporting Committee was appointed, consisting of Messrs. F. Kee and S. C. Richards, to act with the Secretary in communicating reports of the meetings to the various professional journals.

Dr. Baker thanked the Association for the honorable position to which they had called him and outlined the work for the year.

Dr. Adami assured the members of his continued interest in the work of the Association.

Messrs. Greer and McCarrey were instructed to procure material for experimental purposes, and the essayists for the next meeting appointed, after which the meeting adjourned.

HARRI H. DELL, Sec'y-Treas.

INDIANA ASSOCIATION OF VETERINARY GRADUATES.

The semi-annual meeting was held in Marion, July 9 and 10, 1895, Dr. J. E. Cloud, Richmond, in the chair. Members present: C. F. Bell, Kokomo; F. A. Bosler, New Castle; J. W. Klotz, Noblesville; W. B. Wallace, Marion; F. W. Anderson, Hartford City; O. L. Boor, Muncie; J. C. Rodger, Anderson; visitor, G. L. Simon, Marion.

The minutes of the previous meeting were read and approved. On motion, Dr. G. L. Simon was proposed and elected to membership. The Committee on Legislation made their report and were continued. A paper was then read by Dr. J. W. Klotz on "Ovariectomy," which was well received by the members, and a good discussion followed.

Adjourned until 9 A.M., July 10th. At the hour named the meeting was called to order by the President in the chair. A paper was then read by Dr. R. F. Bell, written by Dr. H. R. Macaulay, of Indianapolis (who was absent), on "Pleurisy and its Sequels," which was well written, and showed that the writer was familiar with the diseases of the lungs. A good discussion followed. On motion, the resignation of Dr. J. H. Honan, of Hammond, was accepted, as the doctor having graduated from a Chicago medical college had decided to practice on the human subject, all the members wishing him success in his new sphere. On motion the resignation of Ex-State Veterinarian C. M. Stull was accepted, as the doctor is thinking of changing his professional card. A vote of thanks was tendered Dr. W. B. Wallace for the kindly manner in which he had entertained the members of the Association. On motion, the meeting adjourned to meet in Muncie, December 10 and 11, 1895.

BIBLIOGRAPHY.

LES VACHES LAITIÈRES (Milching Cows) choice, keeping, production, breeding, diseases, products. By E. THIERRY, Professor of Zootechny and Director of the School of Practical Agriculture of Yonne. 1 vol., 16mo., 349 pages, with 75 illustrations. J. B. BAILLIÈRE & fils, 19 rue Hautefeuille, Paris.

This new French work contains all that can be of interest to the owners of milch cows.

The work begins with brief notice of the anatomy and physiology of bovines and the principles for telling the age. This is followed by the consideration of the principal French and foreign breeds used principally for the production of milk; this, with the selection of the cows and their improvement, being presented in the following chapter. The hygiene

of the milch cow is treated at length, to the point of view of the stabling and the cleaning, as well as to that of feeding in the stables or in the field. After treating of the milking, and the various causes that may act upon the production of milk, the author enters into long considerations upon all that relates to the reproduction of the breeds and its breeding, with some practical advice upon the purchase of the milch cow. Diseases of the cow and of the calf form a short chapter, and which is followed to the end of the book by a study of the milk, of the dairy and of the various milk industries. This work is particularly useful to breeders as well as to veterinarians.

OBITUARY.

RODERICK ALEXANDER McLEAN, D.V.S.

Born at Inverness, Scotland, in 1856, he came to this country when a young man, and matriculated at the American Veterinary College in 1876, graduating in 1879, when he won the gold medal of his class for the best general examination. He served as house surgeon at the college hospital for one year, and then became associated with his father, Lachlan McLean, M.R.C.V.S., in the practice of his profession, in Brooklyn.

Contagious pleuro-pneumonia among dairy cattle being very prevalent on Long Island and most of the Eastern States at this time, he was appointed upon Gen. Patrick's staff for the suppression of this disease, in which capacity he served for two years, after which he was connected with the Bureau of Animal Industry.

After pleuro-pneumonia had been stamped out and the prevalence of tuberculosis among cattle had been realized, Dr. McLean was again called upon, and became connected with the State Board of Health for the suppression of this disease. He was Assistant Veterinary Inspector to the Brooklyn Board of Health for a long time, Veterinary Surgeon to the Brooklyn Branch of the American Society for the Prevention of Cruelty to Animals. He also found time to attend the meetings of the various veterinary medical so-

cieties and associations, served on the *Comitia Minora*, and many other important committees of the U. S. Veterinary Medical Association, and was president of the New York State Vet. Med. Society at one time. As an association member, probably no one was more energetic, more zealous, or worked harder for the elevation and general interest of our profession than he, and his genial disposition, his honorable and fearless conduct, his thorough knowledge of all matters pertaining to his profession, and his fluency of speech in debate, made him one of the best known and most respected veterinarians in the country.

He died at the residence of his father, No. 549 Dean St., Brooklyn, on Thursday, Sept. 24, after a lingering illness, and only 39 years of age. The interment took place in the family plot in Greenwood Cemetery, on Sunday morning, attended by none but the family and a few professional friends. Professors Liautard, Robertson and Coates of the American Veterinary College, and Drs. Rose of New York, McKee of Staten Island, and Berns of Brooklyn, acting as pall bearers, and Dr. Chas. Burden of New York officiating as chaplain.

JOHN DUANE, JR.

John Duane, Jr., D.V.S., died in the early part of October, in New York City. Graduated at the American Veterinary College (Class 1881), he practiced his profession but a short time and then entered politics. He served for several years as chief clerk in one of the judicial courts of his native city.

CORRESPONDENCE.

LA SALLE, ILL., Oct. 15, 1895.

To "Exchange," 141 W. 54th St., New York City:

In the September AMERICAN VETERINARY REVIEW is your advertisement desiring to exchange practice with some one. I would like to know where the station is, how much outside practice there is each year—are you allowed anything besides quarters, light and fuel, etc., etc., in fact everything minutely in regard to the situation. Have you the authority

to install another in your position? Perhaps he would be bounced as soon as installed.

I have a friend in the army at Fort Leavenworth, Kas., that gets \$125 a month, house, light, fuel, rations—in fact, everything but clothes. Is furnished with instruments, books, medicines and everything pertaining to his business, also allowed one or two saddle horses for his own use, a chance to keep a cow, etc. Perhaps you think I am looking for a snap! Well, the fact of it is, I have a good practice here and would want something pretty good before I would be tempted to leave. But as I always had a fascination for the army, and am very fond of hunting, I thought I would write and learn the particulars.

I would want as good a thing as my friend at Fort Leavenworth, to tempt me to leave here, as I have been here over eight years and have a great many friends and have bought property. It may be time thrown away, but thought I would write and learn the particulars. It will do no harm even if nothing more is done.

Yours respectfully,

C. E. HOLLINGSWORTH.

AN INQUIRY.

To "*Exchange*":

In AMERICAN VETERINARY REVIEW (September 1, 1895) in regard to trading a position of army veterinary for a local practice, I would like very much to know where that location is, as I am thinking of trading my practice for one in a more arid region. Hoping to be put into communication of "*Exchange*," I remain,

Yours very respectfully,

DR. J. S. MEYER.

FOR SALE.

An old established veterinary practice in one of the largest and best cities in the United States, returns upwards of \$6,000 per annum. To a man of experience, good manners, and address, this is a fine opening. It would also suit two bright, energetic young practitioners, possessing the necessary qualifications.

Address "Practice," care the AMERICAN VETERINARY REVIEW.

AMERICAN VETERINARY REVIEW.

DECEMBER, 1895.

EDITORIAL.

A STEP FORWARD.—Upon different occasions for many years past, we have expressed our opinion in reference to the fact that one of the greatest proofs of union, in a professional point of view, had not yet been riveted in this country between the medical and the veterinary professions, and, in fact, that the central medical associations of many of our States were unwilling to recognize it by keeping away from their membership veterinarians, even when they were members of the medical profession as well.

For years back we have pointed out the fact of the incomplete condition of those societies, because in their various sections or departments, one of veterinary medicine was lacking, calling their attention to the different state of affairs in continental medical organizations.

It was, therefore, with great satisfaction that we received, a few days ago, information that a meeting of the Section of Public Health of the New York Academy of Medicine was to be held, and that the subject of tuberculosis was to receive special attention.

But not tuberculosis in the point of view of medical men, but treated and spoken of by no less than five veterinarians. And it is in this way that it was announced that an introduction on "Tuberculosis as Viewed by a Veterinarian," "The Work of Foreign Veterinarians in Tuberculosis," "The Control of Tuberculosis in Massachusetts," "The Best Methods for the Eradication of Tuberculosis," and "The Transmission of Tubercle Bacilli and Tubercular Products in Milk," were presented before members of the Academy of Medicine and

a number of veterinary students, who had been kindly invited.

The general discussion, in which several physicians present participated, was followed with much interest.

This meeting, and the recognition of the veterinarian in such official manner, must be very gratifying to us. It certainly indicates that the physicians are now prepared to receive us in their societies, and that if we are not yet ready to be active members, properly speaking, to take part in all their labors and discussions, the day is not far off when veterinary sections, in the strict sense of the word, will be organized, and when both sister sciences will work side by side.

Who shall take the lead in this new organization? Shall the veterinarians in a body ask it? Shall the physicians be the first to favor it?

NEW YORK STATE VETERINARY COLLEGE.—We take pleasure in presenting our readers an illustrated description of this new addition to Cornell University—which, thanks to the kindness of the editor of the *New York Weekly Times*, we can reproduce in full.

VETERINARY COLLEGES OF NORTH AMERICA.—In the October REVIEW publication was made of the Veterinary Schools of North America, and some were overlooked. It gives us pleasure to add to the previous list the following:

IOWA AGRICULTURAL AND MECHANICAL COLLEGE—VETERINARY DEPARTMENT. Ames, Ia.

Fundamental Faculty.—M. Stalker, M.Sc., V.S., Professor of Anatomy and Veterinary Medicine. W. B. Niles, D.V.M., Professor of Surgery (General and Operative) and Obstetrics. W. H. Harriman, B.Sc., M.D., Professor of Histology, Physiology and Pathology. F. B. McCall, D.V.M., Lecturer on Shoeing in Health and Disease. A. C. Bennett, M.Sc., Professor of Chemistry.

H. Osborn, M.Sc., Professor of Zoology and Animal Parasites. L. H. Pammell, B.Ag., Professor of Botany and Bacteriology. James Wilson, Professor of Principles of Heredity and Animal Nutrition. A. R. Amos, M.D., Lecturer on Ophthalmology. A. R. Wake, D.V.M., House Surgeon and Demonstrator of Anatomy. Jos. Chamberlain, M.Sc., Assistant in Chemistry. S. W. Bryer, B.Sc., Assistant in Zoology.

Terms.—Tuition free. Small charges for dissecting material, accommodations in students' sanitarium, chemical material, and for breakage in pathological laboratory.

Address Dr. M. Stalker, Ames, Iowa.

UNIVERSITY OF CALIFORNIA—VETERINARY DEPARTMENT.

Fundamental Faculty.—W. F. Egan, M.R.C.V.S., Professor of Principles and Practice of Veterinary Surgery and Equine Medicine. F. A. Nief, B.Sc., D.V.S., Professor of Comparative Anatomy. A. Auchie Cunningham, F.C.S., F.I. Inst., etc., Professor of Chemistry, Materia Medica and Toxicology. S. J. Fraser, B.A., M.D., Professor of Physiology and Histology. Frank W. Skaife, D.V.S., M.R.C.V.S., Professor of Helminthology, Canine Medicine and Surgery and Dermatology. K. O. Steers, V.S., Professor of Therapeutics and Botany. Thomas Maclay, M.R.C.V.S., Professor of Bovine Medicine and Obstetrics, and Veterinary Sanitary Science. Henry B. A. Kugeler, M.D., Lecturer on Pathology and Bacteriology.

Fees.—Tuition, \$100 each year; matriculation, paid once only, \$5; demonstrator of anatomy's ticket, \$10; pathological anatomy, \$10; breakage fund, \$5; diploma fee, \$25.

Address F. W. Skaife, D.V.S., M.R.C.V.S., Dean, 18 Cedar Ave.

These are both three-year schools.

ORIGINAL ARTICLES.

STUDIES IN THE PERITONEUM.

THE PERITONEUM OF THE GRAY (TREE) SQUIRREL (RODENTIA).

BY BYRON ROBINSON, Professor of Gynæcology in Chicago Post-Graduate School.

A comprehensive view of the peritoneum can only be attained by pursuing embryologic and comparative work as well as studying the adult structure of humans. To the order of rodentia belong the rabbit, squirrel, gopher, rat, beaver, etc. I carefully dissected, of this order, the rabbit, squirrel and gopher. They differ but little. The squirrel has two colonic loops in the descending colon, the gopher one, and the rabbit has no double colon, i.e., loop, in the ascending colon. The chief difference found in the rodents from that of man lies in the relation of the transverse colon and the great omentum. Man has a ligamentum phrenico-colicum; the rodents do not.

The examination of the squirrel in question showed a body twelve inches long. The omentum reached half way from stomach to pelvis. It does not cover cæcum, and is filled with waxy white fat; it is ample to reach pelvis by stretching out. Its origin from the greater curvature of the stomach follows the much twisted stomach around the duodenum, to

the point where the left loop of the colon meets it, showing that the meso-gaster and meso-duodenum are one and the

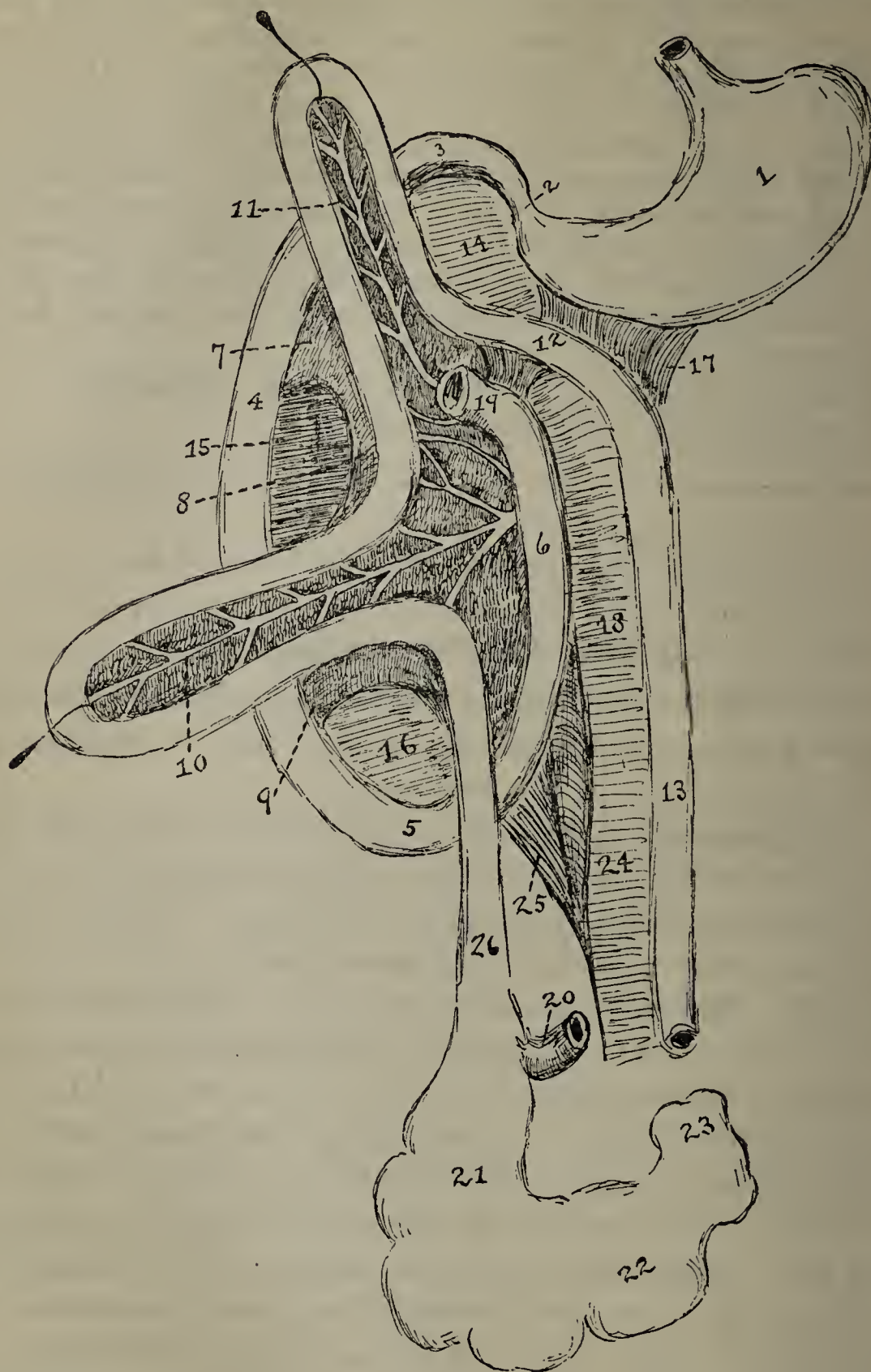


FIG. 1.

same thing. The spleen lies entirely free in the cavity enclosed in the blades of the omentum. The meso-gaster rises precisely from the mid-dorsal line, as shown by this omentum.

The lesser omental cavity shows no adhesions at either end. Huschka's foramen admits tip of little finger, showing Spigel's lobe projecting through it; Winslow's foramen admits pencil. The special twist in stomach is at the pylorus. The lesser omentum is one inch broad and has a perpendicular fold raised in the center, which attaches the liver lobe to the pyloric end of the stomach. The ligamentum hepato-duodenale has a very sharp border. The three distinct divisions of lesser omentum are not sharply defined, as in man. The cæcum lies on left iliac fossa curled up; three inches long; four to five times as large as any other portion of gut, is sacculated, and has three tenia coli; is much smaller at distal end; it has a distinct and entirely free mesentery. The cæcal fossa, superior and inferior, are present. The ascending colon lies in the right lumbar region; twelve inches long, beginning at first colonic loop. The colonic loop next to the ilium, and two inches from it, is two inches long. Each of these loops is supplied by one artery and one mesentery. The first loop from the rectum begins its relation with the great omentum at its base, and this relation extends to the left kidney, a distance of one and one-half inches. In rotating, this loop has begun to displace the meso-duodenum. The next loop passed diagonally across meso-duodenum, appropriating it as far as the duodenum itself, dividing the duodenal loop into three segments; whereas in man it divides the duodenal loop into two segments. The transverse colon is one and one-half inches long. It has assumed relation with the great omentum parallel to the pancreas, which is two inches long. The pancreas reaches about half way down the duodenum, which is six inches long. The pancreas is totally within the meso-colon and also in the meso-gaster, and is not retro-peritoneal in any part. The descending colon begins at the left end of the spleen, where its relations have ceased with the great omentum. The descending colon is inserted directly in the middle line of the abdomen. The descending meso-colon and part of the ascending meso-duodenum have coalesced. This has probably occurred during the axial rotation. From the colonic loop next to the entering ilium the colon is not sac-

culated, nor shows visible tenia coli, nor appendicæ epiploicæ, but the fæcal matter produces a bulging. The sigmoid flexure and meso-colon descendens together are one and one-half inches long. The transverse meso-colon is flat against the meso-duodenum. The ascending meso-colon is free for two inches. The colon is smaller in size than the small intestine. A very long mesentery commune the loops would herniate. There is no fossa duodeno-jejunalis, as in man, but the duodenum has attached to it a very wide meso-duodenum, whose origin is in the middle line. The duodenum is six inches long and its meso-duodenum is one and one-half inches. The pylorus lies to the right of the median line. The small intestines are four feet, three inches long, and the mesentery two inches. The mesenteric glands are in a single row, of some sixteen to eighteen in number. It is the single mesenteric gland like the pig's. The kidney is almost surrounded by peritoneum and is very loose; the fat reaches almost from base to top; almost buries it. There is an excessive amount of fat around each kidney. The spleen is one and one-half inches long and is the shape of a dog's tongue. Its gastro-splenic omentum is three-fourths of an inch long. The liver has nine lobes, lies in middle of body. The gall-bladder is the size of a pea. The left coronary ligament has exactly the same relation to the liver in the squirrel as in man. It extends from the upper surface of the left lobes to the diaphragm and not to the posterior border. The right coronary ligament is the same as in man, but also extends from the upper surface to the right lobe of the diaphragm, and not from the edge or border. From some of the lobes extend separate or distinct ligaments of peritoneum, as if accessory suspensory ligaments. In this specimen the distinct three divisions of the lesser omentum are similar to man, i.e., the pars tendineus, pars flaccida and pars hepato-duodenale, The vas deferens lies in wide folds of peritoneum filled with fat, which exist on each side of the bladder. The inferior mesenteric vein empties into the splenic vein at junction with the super mesenteric, as in man. The left kidney is one-half an inch lower than the right: forced down by the bulging stomach.

GENERAL OBSERVATION OF THE SQUIRREL'S
(RODENTIA) PERITONEUM.

The squirrel's abdomen being open, the mighty cæcum lies curled up on the left side of the left iliac fossa. The two (double-barreled) double colons lie on the right side, parallel to each other and to the body, one anterior (upper), and the other posterior (lower). The one nearest to the cæcum is some three inches in a large gray squirrel, and the next is two inches, i.e., one is about two-thirds as large as the other. The use of these loops of colon, held in a single mesentery, and fed by a single artery, must have been originally for the same purpose as the enormous cæcum, viz.: secondary stomach where the food could tarry and be fully digested. The apparent danger of such double colons and such free, mobile cæca and added mesenterium commune is volvulus, and Dr. Baker, professor in the Chicago Veterinary College, informs me that this is just what often occurs in the horse.



FIG. 2.

The squirrel's (rodent's) peritoneum is very thin and almost transparent. It is very luxuriant and abundant. Excessive long folds exist. The great omentum is large enough to reach into the pelvis, but is not so large as that of the carnivora (cat and dog). The relation of the great omentum with the transverse colon and the relation of the ascending colon (with its loops) with the anterior face of the meso-duodenum is distinctly that of displacement, readjustment or appropriation of peritoneum. But the relation of the meso-duodenum (of the last ascending part) with the descending colon is difficult to interpret. Whether the two double folds have blended, coalesced, or readjusted themselves will require further study to decide.

How susceptible the rodentia are to peritonitis I have no means at present of knowing. The vigorous and extensive twist and rotation of the stomach in rodents is remarkable. I found no evidence of residual peritonitis in the squirrel, as in man.

The gopher (rodent) is an animal belonging to the same genera as the squirrel. Its visceral serous membrane differs from the squirrel in that the gopher has only one (double) colonic loop in the ascending colon. The double colonic loops I have found in solipeds (horse). They are fed by one artery and held in relation by one narrow mesentery. No doubt the similar double colonic loops in man are reversions (atavism) to solipeds (horse) or rodents (squirrel).

The difference between the peritoneum of man and squirrel (rodents) is not very great. The axial rotation in the squirrel's navel loop is not quite so complete as in that of man. In another sense it is more complete, for all herbivora possess a well-developed peritoneum and viscera, for the nature of their food evolved an advanced digestive apparatus. The squirrel has a long, free duodenum attached to a free, long meso-duodenum. Both surfaces of the meso-duodenum are faced by shining pavement endo-thelium, which characterizes the peritoneal surface. In man the shining pavement endo-thelium is displaced from both sides of the meso-duodenum, leaving only the real neuro-vascular visceral pedicle.

The relation of the transverse colon and great omentum differs in that its relation to the left side does not produce a ligamentum phrenico-colicum as in man. In no rodent did I find residual peritonitis as I have in man and solipeds.

Fig. 1. This sketch I drew from nature, the subject being a gray tree-squirrel (rodentia). It represents the long, free duodenum (3, 4, 5 and 6), and the descending colon as it passes in front of the left blade of the meso-duodenum. 1, stomach; 2, pylorus; 3, 4, 5 and 6, duodenum; 7, 8 and 9 shows the ascending meso-colon dragged up from the left blade of the meso-duodenum. 10 and 11 point to the arteries of the two loops of the ascending colon which are put on a stretch by the two hooks at the top of the loops. 26 marks the ascending colon just before it widens into the cæcum. 13 shows the straight rectum with its meso-rectum inserted in the middle line. 14, 15 and 16 mark the left blade of the extensive meso-duodenum, over which the ascending colon is irregularly spread with its two loops. The loops in the living animal lie parallel to the body, with their tips posterior. 17 is a significant mark, as it shows the right beginning relations of the great omentum with the transverse colon joint. It is the standard which I have chosen in man as the upper end of the ascending colon. It will be either the right edge of the ligamentum hepato-duodenale, or the right edge of the ligamentum hepato-colicum. I did not sketch it as extending far enough to the right, because I wished to represent the meso-duodenum. 12 is the upper right border of the ligamentum hepato-duodenale, or the ligamentum hepato-colicum, and 17 is the right portion of the ligamentum gastro-colicum, or the great omentum. 18 and 24 represent the descending meso-colon inserted directly in the middle line. The left kidney does not disturb it as in man, nor steal a part of it to cover its surface as in bimana. 19 points to the lower end of the duodenum, or the beginning of the jejunum. 20 is the ilium entering the ascending colon. 21, 22 and 23 are the cæcum. There is no appendix in a squirrel. (The only animals possessing an appendix are the wombat, man and the higher apes). Observe the peculiar fold at 25, which is found with

peculiar distinctness in the dog. The fold is not correctly shaded and should extend on the meso-colon descendens from 18 to 24, i.e., the insertion of the fold marked at 25, is at considerable distance from the root of the meso-colon descendens. This fold is, in my opinion, due to the rotation of the navel loop. The cæcum started at 12 and travelled, by the aid of growth and rotation of the navel loop, to the adult home in the right iliac fossa. Developmental processes in the peritoneum may be easily observed in the various species of animals.

Fig. 2 is a life-sized drawing which I sketched from a gray tree-squirrel (rodentia) to represent the cæcum and first or lower loop of the ascending colon. It is drawn as closely as possible to nature in size and form. 1, 9 and 4 mark the artery which supplies the bowels. 8 and 7 mark the lower loop of the ascending colon. 2 marks the ascending colon between the lower and the entering ilium. 3 notes the artery passing behind the ilium. 5 and 6 mark the cæcum. Its exact proportions are represented to the ascending colon from a squirrel with a body twelve inches long. The monstrous cæcum fills almost the entire lower (posterior) abdomen. The danger of such a cæcum is volvulus. In the squirrel it lies more in the left cavity than in the right. It is much less in size in proportion to the rabbit. The squirrel has no appendix except what is seen in the picture. The peritoneal folds of the squirrel are much more extensive and liberal than in man. No peritoneal adhesions of any kind were found in this squirrel. The cæca of the herbivora, rodentia and solipeds which I have carefully examined, as to size, relations and peritoneal coverings, seem to be the remnant of some ancient stomach, or pouch where food could tarry until it was absorbed or utilized.

ON IRON AND ITS ASSIMILATION BY THE ORGANISM.

By L. H. FRIEDBURG, PH.D., Professor of Chemistry and Toxicology, American Veterinary College.

In a paper read before the Academy of Medicine, on Tuesday, October 15, 1895, I took occasion to state mainly the following points in regard to the above question:

Of the normal iron of our body which is excreted in metabolism, about 10 per cent. appear in the urine and about 90 per cent. are excreted by the intestinal mucous coat.

If we inject iron hypodermically or intravenously it will appear in the very first minutes in large quantity in the urine, without, however, being firmly linked to organic material. In such a case we observe metal kidney, the parenchyma having been attacked.

Of the iron, however, which had been administered per os and was not merely received by the system, but assimilated, we may suppose that it will be secreted like the normal iron, 10 per cent. per urine and 90 per cent. per fæces. But then that 10 per cent. will be firmly linked and not detectable by the ordinary reagents.

The mentioned 10 per cent. must therefore be considered as a measure for assimilated iron. The average amount of normal iron voided in 24 hours is one milligramme.

To determine whether in a case of administration of iron compounds the firmly linked iron in the urine is increased or not, and for how much, we must be led by the foregoing considerations.

It has to be stated that none of the iron medicines existing heretofore, of any name whatever, sensibly increase the mentioned amount, that we consequently are not justified in considering them to have been truly assimilated.

When Bunge at the May meeting (of the year) of European naturalists at Munich, emphatically states "the best place for buying iron is not the drug store, but the vegetable and egg market," referring to yolks and spinach, he was right in so far as in those substances the iron is contained linked in such a manner as to appear in a form ready for assimilation. But he forgot that newer researches had attempted, and successfully attempted, to furnish such compounds in which the iron was firmly linked to an albuminoid substance, in which it was contained to the amount of about 2 per cent. This substance is Kobert's hæmogallol.

Kobert satisfied himself by prolonged experimental study, that most if not all of the then existing iron compounds were

not assimilated. However, he faced the fact, as well as every one of us, that some of these substances were of a certain beneficial result. This he explained then as consisting in an entirely secondary mode of action. An action of the iron upon the intestinal gases, mainly upon hydric sulfid, with which the iron would combine, forming black ferrous sulfid, eliminating it as one of the poisonous intestinal gases and rendering its action upon the iron contained in the blood impossible. Also a mucin-iron would be formed.

But then Kobert did not rest there. He found that the chicken was able to produce its hæmoglobin, embryonically and post embryonically, from yolk of egg. Experiments with this substance upon carnivora, including man, were not encouraging, since yolks are not compatible in large amounts. On the other hand he found that the dog, which scarcely can be said to feed upon yolks, covers the entire metabolic loss of iron by the blood which he partakes of in his food.

The blood is therefore to be considered the true starting point for the correct administration of iron to be assimilated. Now, all the blood iron preparations existing heretofore had two drawbacks. They consisted either of pure dried blood, which is objectionable from two points of view: first, from that of taste; second, by the fact that it covers the intestinal canal with a black tarry mass. Or such blood was mixed with iron salts which as such had no value other than that of neutralizing H_2S , but which eventually produced impaired digestion, if not worse than that, metal kidney, after prolonged use. Nevertheless, the dog stood there as a living example of a carnivora partaking successfully of blood.

Now Kobert reasoned thus: If for the human system the dog cannot appear as a prototype, what could be abstracted or learned from this example concerning man? What is the fate of blood partaken of as a food? The action of the intestinal tract upon such substances as blood is a reducing one. The word reducing is to be understood in a chemical sense. It had therefore to be tried what effect reducing substances would have upon the blood, extra corpus, and then if such action was discernible how would the products obtained act after internal administration.

Experiments were performed with the different reducing substances which chemistry disposes of. Finally pyrogallol was tried, and resulted in a substance called hæmogallol. Solution of cattle blood freed from stroma is heated with concentrated aqueous pyrogallol. After different manipulations the primary, impure, reddish brown precipitate is finally obtained in the pure form of a tasteless, not smeary, powder of dark brown color and insoluble in water.

9.7 grammes of iron in form of hæmogallol increased the amount of firmly linked urine iron to the amount of 150 per cent. This increase cannot be attributed but to the hæmogallol assimilated.

The question whether this substance contained free pyrogallol, which pathologically, by decomposition of blood corpuscles, would increase the iron of the urine, is absolutely excluded by three experiments. Water does not dissolve any of it from hæmogallol. Fresh blood is not acted upon by hæmogallol and the spectrum remains unchanged. A small cat after the administration of 10 grammes remained in perfect health, and showed no diminution in the amount of red corpuscles.

Then animal experiments were resorted to, and it was invariably stated that, even in excessive doses, such as never would apply to man, the animals remained healthy and increased in weight.

When at last the experiments on man were begun it was shown that the action of hæmogallol upon chlorotic or anæmic patients was invariably an extraordinarily favorable one.

In one particular case where ferrum sulfuricum and the chalybeate waters of Pyrmont were without use, hæmogallol acted splendidly. Even an individual case of pernicious anæmia was doubtlessly temporarily relieved, and the number of blood corpuscles, as well as of hæmoglobin, was found to be increased.

A female patient suffering incessantly of anæmic headache has been *entirely* cured by the use of hæmogallol (Friedberg). Two patients whose menses had stopped for some length of time were restored to normal conditions after three

to four weeks' administration of hæmogallol (0.3 grammes were taken three times per day). The profession of Russia, Germany and Austria has decided favorably in regard to the action of hæmogallol—by means of an interrogatory circular which has been sent abroad.

There is no reason, therefore, for the practitioner to be skeptical. Even in case of a weakened condition of the digestive tract hæmogallol may be prescribed, since no deleterious action in the sense of the older iron proportions ever occurred.

HÆMOL AND ZINC HÆMOL.

For hæmol results have been obtained on animals showing that even direct intravenous application did not produce any symptoms of disease.

Hæmogallol, as well as hæmol, are therefore the two iron compounds par excellence which are of no detrimental action whatever, and which allow successful application even in the gravest forms of anæmia.

The hæmogallol is, so far, preferred, since it is the more tasteless one of the two preparations.

Kobert did not stop there. He prepared compounds of hæmol with the heavy metals, iron, copper, mercury, and with the haloids, iodine and bromine. Even a mercur-iodo-hæmol has been prepared.

The non-corrosive copper compounds just begin to attract attention in regard to their action in case of chlorosis, which *Cervello* has described. Copper hæmol is indicated in preference to the other proportions, which are still more or less caustic.

Professor Koch has performed experiments with copper hæmol on lupus patients. The lupous infiltrations were reduced and the skin returned partly to normal appearance. In France these experiments are just now studied further.

The mercurio-iodo-hæmol and brom-hæmol are to be recommended for the double action of blood reconstructors and specifics. The iodo-mercurio-hæmol is positively to be considered at present as the most suitable specific against syphilis.

The preparation is not a mere mixture but a definite organic compound.

Brom-hæmol, though containing less bromine than potassium bromide, is preferable to the latter, because it is not as soluble and is not secreted as rapidly by the urine. In cases therefore where an inundation of bromine is not necessary (I remind of neurasthenic patients or women in climacteric age) certain advantages are gained.

I will conclude by giving a few observations of *Rille*, one of the most reliable European syphilidologists. He says: "We cannot thank Kobert enough for his preparation containing mercury and iodine, which has the advantage to show fewer secondary effects, such as salivation or stomatitis, dysenteric appearances, etc., etc."

Twenty-five patients were treated so far with mercurio-iodo-hæmol, and in no instance had the treatment to be stopped because of the appearance of mercurial symptoms.

In a few cases in which the mouth was not cared for according to the rule of art, salivation and swelling of the gums obtained, but, without the foetid *pus* peculiar to genuine mercurial stomatitis.

One third of the cases offered in the first few days of treatment three to four mushy and diarrhoeal discharges, which, however, disappeared afterward without the application of styptics. The mucous intestinal coat had become accustomed to the drug. The *curative* action cannot be said to be pronounced better than with other mercurials, but is of analogous value as that of mercuric iodide. However, even here, towards the termination of the cases, *no* injections had to be resorted to.

The treatment consisted of: In the beginning, 5 grammes distributed upon 60 pills, 6 of which were administered daily. The therapeutic effect being somewhat tardy, the doses were then doubled.

The series of experiments included all stages of the syphilitic process.

Maculous syphilis required for its disappearance an average quantity of 110 pills, equal to a treatment of 16 days. In papulous cases 170 pills were needed.

A particular case of *universal syphilitic lichen* with *roseola* and *psoriasis plantaris* required 219 pills and a treatment of 36 days.

The total result shows that iodo-mercuro-hæmol cannot be substituted for the more active ointment or injection treatment, but *no* internal application of mercury whatever is capable of competing with these.

We must not forget, however, that mercuro-iodo-hæmol is the first preparation in existence which contains mercury and iodine, together with iron. Consequently we are in its case in possession of a specific *and* a tonic at the same time.

Ferrum iodatum does not approach it in action.

The mercuro-iodo-hæmol is therefore indicated in cases of paleness of skin, marasmus and combined scrophola and syphilis.

REPORT OF THE COMMITTEE ON DISEASE.

BY M. R. TRUMBOWER, Chairman.

Read before the United States Veterinary Medical Association.

(Continued from page 487).

ILLINOIS.

In my report of the disease that came under my observation during the past year in the State of Illinois, I will make my remarks as brief as possible, as I wish to take up some little time on one special disease.

In speaking of glanders, during the past year we destroyed 143 horses and mules affected with glanders, or farcy. Of this number 32 were cases discovered in three of the street car barns in the city of Chicago. During the month of May we made an inspection of all the street car horses used in the city of Chicago. We inspected 5,375 of them, and found the disease existed in three of the barns, 955 of which are now under quarantine restriction. About two weeks ago we discovered the disease in two stables along the drainage canal, in one of which there were seven out of ten affected. The average pay for diseased horses during the past year has been

about \$20 per head. Outside the city of Chicago I think the disease is on the decrease from year to year. We believe that in allowing the owner some compensation for diseased animals that it aids us very much in obtaining reports of suspected cases, and incidentally in discovering exposed animals which we are thus enabled to quarantine, and prevent any further spread of the disease in that locality. In the large cities it is often very difficult to obtain any history concerning the diseased animals, or direct exposures to them, while in the country districts we seldom meet any difficulty in obtaining all the information that is necessary for the proper protection of the community.

Cerebro-Spinal Meningitis.—In the past year I have found this disease existing in two different stables. In one of these six out of seven died, and in the other four, all the horses the owner possessed. The stable was in bad condition for disinfection, so I destroyed the two horses that were still living in the barn, set fire to it and burnt the horses with the barn.

Spasms of the Larynx.—This occurred on one farm last year, the owner losing five horses in about six hours. The cause was entirely obscure. All the surroundings appeared in an excellent hygienic condition.

Texas Fever.—Four cattle died last fall with Texas fever that were infected by some Southern cattle that broke out of a car on the railroad track. The car had caught fire, and one carload of cattle escaped, roaming over pastures and cornfields. The neighbors got after them immediately and drove them into a man's yard where they were held over night. On the following day they were again loaded and shipped to market. About three weeks later the owner of the farm on whose place the cattle were held over night, lost two of his cows within forty-eight hours after the first evidence of sickness. Subsequently, two more died. Last month an outbreak occurred in Brown County, among cattle that were shipped by boat from East St. Louis and unloaded in Brown County and distributed on three different farms; sixteen of this number died. Four native cows that had crossed the

trail of these cattle, died about three weeks later. Forty-one head of the eighty-five that were shipped from St. Louis were sent to the Chicago market for sale. None in the bunch had yet shown any signs of disease, but the owner became alarmed when he heard some of the other cattle had died, and he thought it would be safer for him to market his. When they arrived in Chicago they were placed in the Texas division, and I was immediately notified. Next day we took them to the slaughter-house and killed them under my inspection. I found seven of them showing lesions of the disease, five of which were so bad that I condemned them as unfit for human food. Two others I condemned for being very badly affected with *distoma hepatica*.

Anthrax.—There were only two cases of death by this disease reported this season.

Intestinal Worms.—The disease caused by the *strongylus tetracanthus* and the *strongylus armatus* seems to be increasing in this State year by year. Last fall and winter there were probably 200 deaths that have been reported to me, caused by these parasites.

Rabies.—I have had two reports of outbreaks of rabies among horses, cattle, and dogs, but I had no opportunity to make a personal investigation. I have reason to believe that at least one of these reports was true. In connection with this subject I will present an abstract from a letter written to me by Dr. A. H. Baker, of Chicago:

“The only thing in practice that I can think of, of interest to you, is a very prevalent disease of dogs that we call diphtheria, but it is a question in my mind whether it is properly named, for there is an absence of any diphtheritic membrane. The dog is attacked with high fever, rapid pulse, and loss of appetite. On the second day the lower jaw begins to drop, and drops more and more from day to day. The visible mucous membranes, especially that of the mouth, are at first injected and become livid on the third day, with inability to swallow at that time. They rapidly grow worse and die from collapse at the end of the fourth or beginning of the fifth day. There is no delirium, no inclination to bite or gnaw. Inocu-

lation fails to communicate it to other dogs, yet it runs a perfectly definite course and ends fatally in every case. Dr. Lagorio says it is rabies, but I cannot see a single symptom of that disease in them."

Cornstalk Disease.—My personal attention has been called to only one outbreak of this disease last winter.

Last fall, during the dry season, a report reached me from Franklin County that some contagious disease existed at Pitts Hill. On my arrival there I discovered that one man had lost three out of four horses in about three weeks' time. They reported falling off in flesh, limbs became oedematous, and they were very much debilitated. When they got down they were unable to arise, and died without indicating much, if any, pain. They were pastured in an orchard on high ground, but the pasturage was short. They obtained some green fodder, and went to a well at the bottom of a hill in which a little stream of water drained, coming direct through a hog lot where about twenty hogs were wallowing in this stream. I drew up some of the water from this well, and the stench was so strong that I did not think it possible that a horse would drink it. While I was there a neighbor led two of his horses up to the trough, drew some of the water, and the horses drank it with avidity. He stated that he had just recently commenced watering at this place, for the reason that his well had gone dry. I warned him of the danger, and he seemed to appreciate it, and said that he would not water there again. I attributed the death of these three horses directly to this polluted water.

Actinomycosis.—This disease during the past year has not been any more prevalent than in former years, nor do I think that it is diminishing. I have received numerous reports of isolated cases throughout the State, asking for advice. Occasionally some farmer, or feeder, will report three or four, or even more cases in his herd. One prominent feeder of Cass County, whom I recently met, told me that during the month of May about twenty cases appeared in his herd, but they were all of them local affections—loose tumors about the neck and jaw. He shipped seven of the worst cases with

two carloads of cattle to Chicago, and the inspector held four of them for post-mortem examination. Three of these I passed in the slaughter-house, and condemned the remaining one. I found one affected internally, having actinomycotic tumors in the liver. On the 23d day of July, last year, the State Board of Live-Stock Commissioners, in connection with the Live-Stock Exchange at the Union Stock Yards, Chicago, adopted rules and regulations for the examination of all cattle that come into these yards that manifested any suspicion of being affected with the disease. The State put an Assistant State Veterinarian there, whose duty it is each day to examine, at once, all cattle that are reported to him by the various commission firms. He has four men with him to assist in tagging, driving, quarantining, and keeping the records. From the twenty-third day of July, last year, until the first day of September, this year, he examined under this rule, 9,295 head of cattle; of this number he passed 6,578. Cattle that he passes have a passed tag put in their ear, as evidence to any purchaser that the animal is fit for any market purpose, hence the owner obtains full value for such an animal, while before this rule went into effect the majority of these cattle were purchased by the professional lump-jaw dealers at less than one-half their actual value; 2,717 were held for post-mortem examination. All of these I inspected at the time of slaughter, and condemned out of this number, 2,004, leaving a balance of 713 to go on the market as healthy beef. Out of this number that I condemned in the slaughter-house, 127 were condemned for being tuberculous; 50 on account of being excessively emaciated; 18 were affected with cancer; 9 in an advanced stage of pregnancy; 9 that had gangrenous abscesses; 13 were condemned for excessive bruising. The State Board also has an agent at the East St. Louis yards, and during this same period he condemned and killed forty-three head. This system has proved eminently satisfactory to the shippers, the commission men, and the State Health Authorities, and I believe the State Board of Live-Stock Commissioners of Illinois have reason to congratulate themselves on the efficient work that they have inaugurated.

Tuberculosis.—This State has not taken much action looking towards the control, or eradication of this disease. Only in a few instances, where special demands were made by the owners of suspected herds, and who agreed to abide by the decision of the Board and the veterinarian, was obtained aid from the State in the examination of their herds. We used the tuberculin test on one herd of twenty-one head; nine of them reacted and we killed them under my inspection. Each showed lesions of the disease; seven of them, however, so slightly as to justify their sale for beef purposes. Another herd of nineteen head, which had not been tested by the tuberculin test, were destroyed under my inspection; seven of them were diseased, five of which were condemned as unfit for consumption. In the month of July we used the tuberculin test on a herd of 132 head of cattle, belonging to Mr. H. B. Gurler, of De Kalb, who is one of the leading dairy-men in the State. He had taken special pains to weed out his herd, for a number of years, of all objectionable animals—of all cows that did not give a sufficient amount of milk to be profitable. He had been watching his herd very closely for the last two or three years, being fearful that this disease might possibly develop, as the majority of his herd were high grade Jersey cattle. Last spring one cow manifested signs of sickness, became emaciated and debilitated. He employed a local veterinarian, who diagnosed tuberculosis. Mr. Gurler then made application to the State Board to give him aid and advice in making the tuberculin test on his herd. The test was faithfully carried out, covering a period of about two weeks, with a sufficient number of assistants to observe the necessary rules. The tuberculinum Kochii was used with the surprisingly satisfactory result of obtaining five reactions of from two or more degrees increase of temperature, and two with a lower degree that may be considered doubtful. The five included the cow that had been sick for the previous three months. She died three or four days before we made the post-mortem examinations on the remaining four. She was in a very bad stage of tuberculosis; one lung being almost entirely occluded with deposits. Of the other four,

two of them were tuberculous, one of which manifested it only in the bronchial lymphatic glands, while the other one had tuberculous deposits in the liver, the mesenteric glands, and the peritoneum was studded with tuberculous nodules. The other two failed to present any tuberculous lesions whatever. This whole herd will be re-tested in the course of two or three months from now, to make it absolutely certain that no suspicious animal is allowed to remain in it. We made a few other tests on a small scale, but they are not of sufficient importance to make mention of here.

Influenza.—Influenza has been quite prevalent in many sections of the State, and in several of the larger towns assumed a severe type, with many complications. Especially was this the case at Quincy, as reported by Dr. J. Pease.

Dr. Ditewig, of Canton, reported that he had six cases of tetanus in the month of June.

Aside from these diseases mentioned here there has been no very prevalent disease in the State during the past year, with the exception of one, the history of which I will now relate. It is a very anomalous disease to me. I have been unable to find anything in literature that corresponds with the history of this outbreak, and I am at a loss to account, in a satisfactory way to myself, for the cause of it.

During the month of January last I received a number of letters from various sections in the southern part of the State, describing a disease which affected their mules and horses, and asking for advice. I did not give it very much attention, as from the description I believed it to be some local disease that was not fatal in many cases, and was probably due to improper feeding and care. But similar reports continued to come in until the early part of March, when the State's Attorney of Clinton County addressed me a very urgent request to come to their place and investigate the disease among horses and mules which was proving very fatal. I arrived at Carlyle on the fifteenth day of March, and proceeded to make inquiries concerning this disease. I spent two days in the village, meeting a great many farmers that were coming in from the surrounding country; nearly every

one with whom I conversed reported that he had some animals affected in the earlier part of the season, some of which recovered, and others died. I experienced considerable difficulty in finding any recently developed cases, although I was shown a number of horses on the streets that had been affected, and were still showing some evidence of sore and chapped lips. It appears that a few cases occurred early in the fall, but this outbreak did not become serious, or attract particular attention until after New Year. I traced up 67 deaths of horses and mules within a radius of five miles of Carlyle, and the reports of several hundred that had been affected. In fact, nearly every farmer had some experience with the disease, many animals after having apparently recovered from the first attack would have a recurrence. Some of them in this manner were affected three or four times.

It was difficult to get a very exact history of the appearances, either ante or post-mortem, as the statements were so conflicting that I was compelled to sift out the most reliable statements and accept them. In the majority of cases the animals were affected locally. The first manifestation was a soreness about the lips and nostrils, the skin would become more or less excoriated, and become chapped, cracks and fissures forming without much swelling, in many cases interfering with prehension. The mucous membranes of the nose, and the inside of the lips became tumefied to some extent, more especially those of the anterior nares. Hence, many of the cases were reported as being suspected glanders. Not uncommonly, there would be more or less hemorrhage from the nostrils, and a petechial discoloration of the membrane. In very few instances was there any tumefaction of the submaxillary lymphatics. A smaller percentage of cases manifested some difficulty in swallowing, and occasionally in chewing their food. Emaciation and debility gradually progressed, but the appetite never became entirely suspended. Occasionally one manifested evidences of suffocation for twelve or twenty-four hours before death, either as a result of laryngeal or pneumonia congestion. Others lingered along for from seven days to four weeks before death occurred. A

few cases were described to me as having shown colicky symptoms after three or four days, with slimy passages from the bowels. Only in a few cases were there any anasarcaous swelling about the limbs or abdomen. I think I am safe in stating that two-thirds of the animals that died failed to manifest any acute suffering at any period of the disease, or manifested any plain evidence of acute disease of any one or more organs. In animals where the disease remained confined to the skin about the mouth and nose, relief was almost immediately obtained by using some bland ointment on the sores.

Under such simple treatment as that they readily healed up, but they would recur very soon after the treatment was abandoned, unless at the same time a change of feed was introduced. I think I have succeeded in tracing it to the feed that these animals obtained, or something ingested in connection with it. The drought in that section of the country was extreme last fall. The hay crop was an entire failure. The farmers were compelled to winter their horses on corn fodder, straw, and cut oats. The oat crop was very light, yielding from 5 to 15 bushels to the acre; the straw was light and immature. The corn fodder, to a very large extent, was cut and gathered in bundles, and fed to the horses in the stables after the corn was husked out. The wheat crop was very good, and all the farmers had plenty of wheat-straw for feed, which was invariably stacked out doors as it came from the machine. In the fall, soon after oat harvest, after the pastures gave out entirely, most of the farmers commenced to cut sheaf oats, feeding about a half bushel of these oats, "hexel" as they called it, once or twice a day. Three bundles of these oats cut up, would make a bushel, so the feeding qualities of this amount were very meagre. About the holidays four-fifths of the farmers had fed up all their oats, or "hexel," and were compelled to turn their horses to wheat-straw stacks and corn fodder. Now all the farmers with whom I talked that had fed mixed feed, bran, oil cake meal, or ground corn mixed with their "hexel," or mixed with cut wheat-straw, suffered no loss from this disease, although many of their horses became mildly affected; while the farmers who relied

upon the corn fodder, and the wheat-straw for maintenance, lost horses with this disease; one instance in particular, the history of which attracted my attention, was related to me by Mr. McCully, one of the most progressive farmers in that community. He lost six animals with this disease, and had five remaining, all of which had been affected three or four times. The first one became affected while he was feeding corn fodder in the stable. It died in about a week, at which time the second one was showing signs of the disease. He then took his horses out of the barn, cleaned up all the manure and accumulations under the mangers, hauled in some fresh dirt, and left the stable empty for several weeks, in the meantime feeding his horses in the yard on fodder thrown up in the hay rack. After awhile he discontinued feeding the fodder in this manner, but threw it out on the ground to these animals. A few days later some of them commenced to manifest disease about the nose and mouth. He then took them back into the barn; but lost one more before the remainder recovered. He then ceased feeding fodder and fed them on ear corn and wheat-straw. They seemed to do well for a time, and he thought all danger was passed and commenced to feed fodder again, when the disease recurred as before. Now this is the history that was practically related by every one, with the exception that some attributed it to the feeding of wheat-straw, while others thought it was communicated by fodder only. My first impression was that it was due to some rust or mould fungus that grew upon vegetation the past season, but as there was such an entire absence of mycotic gastritis, or enteritis, I could not make up my mind that this was the ordinary form of disease resulting from such causes only. It appeared the animals that were furnished the smallest amount of nutritive food substances were the ones that became fatally affected, indicating, that the impoverished condition of the system was unable to resist this disease-producing cause.

(To be continued.)

TUBERCULOSIS.

Address delivered by Dr. JOHN FORBES, of St. Joseph, Mo., at the regular meeting of the Missouri Valley Veterinary Association, October 2, 1895.

Much has been said and written recently in regard to the subject of tuberculosis, and to many it may seem a re-hash to consider it again. When, however, we know that a great proportion of the deaths in the human family are due to tuberculosis, that the disease is common to man and the lower animals, and that its existence in the animals that maintain the food supply of man is a menace to public health, and when we consider that the veterinarian must be the guardian of the public health in this respect, I think you will agree with me that it is a subject that cannot be too often considered. I regret very much that other duties have prevented me giving the attention to the subject that it demands, but what follows I trust will evoke a hearty discussion of the subject. In laying it before you for discussion and your consideration, I wish only to emphasize a few of the most important features of the subject. Koch's discovery effected a complete reformation in the clinical views of tuberculosis. All sorts of theories prevailed previous to that. Clinical medicine reconstructed itself to comply with the views imposed by the discovery.

Of the various points in the subject none seem to be more assailed than heredity. There has been no direct proof of the inheritance of the disease, but it is a clinical fact, nevertheless, and one of almost daily experience, that the disease reaps its harvest among the offspring of tuberculous parents. When the disease appears at an early age the hereditarians believe that there has been an hereditary infection instead of an early direct infection.

There are many ways in which the young can be infected. Close contact with a diseased mother or other diseased animals, and the contamination of the food with sputum containing the bacilli. Milk, however, in the human subject, is the most frequent source of infection, and it is surprising how little the general public are enlightened upon this sub-

ject. They recognize that the disease exists in the beef supply, and they consider a rigid inspection of meat a matter of necessity, but they seldom think of the dangers lurking in one of the most universal articles of diet. Even in intelligent families too little attention is paid to the source of the milk supply for children. It may be that the fear of infection by milk is exaggerated, but one can hardly think so when we hear of the frequency of tuberculosis of the mesenteric glands in the young. It is obvious then that a great responsibility rests upon those who have the supervision of the health of children.

There are other methods by which infection may take place and which may simulate hereditary transmission. A diseased progenitor may contaminate the stables or utensils and impart the disease to the young, and the less space allowed to animals, and the closer they are confined, increases the danger.

While we cannot believe in hereditary transmission, experience shows that the offspring of tuberculous progenitors sooner or later manifest the disease when exposed to the exciting cause, and we also know that nurses and attendants in consumptive hospitals, while exposed continually to the danger of infection, very infrequently contract the disease. We are thus compelled to acknowledge that a healthy body can resist the attack of the bacillus, and that the bacillus in order to flourish must have a suitable pabulum. Vigorous parents will bestow upon their offspring a vigorous constitution, and weakly parents bestow upon their offspring their habits of body. In this bestowal of a weakly habit of body to the offspring we may find an explanation of the theory of heredity.

But it matters not if we do have this weakly constitution, the bacillus is an absolute necessity to the propagation of the disease. The bacillus of tuberculosis is not ubiquitous. It exists only in the immediate vicinity of a tuberculous patient, hence it must exist plentifully in the popular resorts for consumptives, and we must conclude that when the resorts are well patronized by tubercular people, they are dangerous places for delicate persons.

Besides this inherited weakness of the system, this so-called "tubercular diathesis," there are other influences which may reduce the organism to the state suitable for the propagation of the bacillus.

In cattle the most potent influences are overcrowding, and excessive milking, a very common occurrence in city dairies; and let me impress upon you the fact that a phthisical attendant of dairy cattle may be a source of danger, not only to the health of the cattle, but to the public who consume the product of that particular dairy.

The city that does not have a scientific supervision of the source of its milk supply lacks in its duty to its citizens.

There are cases on record of a phthisical patient which imparted the disease to chickens in the yard, who devoured his sputa; of another who inflicted the disease upon two pet dogs in succession, and would have given it to the third had the patient not died before it could be effected. If that can be said of these animals, might not the same be true in regard to cattle? Even if it were not, there is always the danger of the milk becoming infected through the dried sputa of the diseased attendant, and we all know that milk is one of the most frequent habitats of disease germs.

We have seen that the bacillus must find entrance to the body before we can have tuberculosis, and it may be of interest to us to know how it gains access.

Infection through wounds has often been recorded, and in such cases the process of repair is retarded, the infective process spreads to the adjacent glands, and ultimately results in general tuberculosis. Fraenkel relates that this had taken place in surgical operations.

Through the alimentary canal infection often takes place by the ingestion of contaminated food. Being able to resist the action of the gastric juice, the bacilli readily gains entrance to the abdominal glands.

The most frequent point of entrance of the bacillus is the respiratory tract. As with the other methods of infection the same conditions do not prevail in this instance.

The substance that contains the bacilli must first dry up

and be reduced to a powder, and the bacilli be lifted into the air, from which it is inhaled. Only such bacilli as withstand the drying process can enter this way, and it must be remembered that the tubercle bacilli has a great power of withstanding this drying process. This theory, as against the other, that the bacteria free themselves from where they are contained and are carried upward by the air or by evaporation, has been clearly proven by a series of beautiful experiments related by Fraenkel in his book on bacteriology.

Dust collected from a dwelling where dwelt a phthisical patient produced tuberculosis in a guinea-pig. Dust taken from a place where there was no consumptive produced negative results. It was found that the dried sputa found in the pocket handkerchiefs of consumptives was a prolific source of the bacteria. As I have already indicated, every consumptive is a source of danger to the health of animals as well as to the people around him.

The bacilli having gained access to the body by reason of their biological quality, they originate an irritation resulting in a true inflammation. It is then that a struggle between the cells of the tissue on the one hand and the bacilli on the other takes place, and the result is determined by the vitality of the cells or the infectiousness of the bacilli. Should the cells conquer, the bacilli are destroyed before they can do any injury, but if the bacilli conquer, the result is well known.

It may interest us to glance at the theory of phagocytosis. Phagocytes are formed of leucocytes and fixed connective tissue cells. They are of two kinds, the large and the small. It seems to be the duty of these elements to fight the battle on behalf of the organism against the invasion of the bacilli. As soon as the irritation is set up they hasten to the battlefield, and the fight is on to the death. The phagocytes endeavor to devour the invaders, to digest them and render them sterile. It seems that certain bacilli do not require the whole force of the phagocytes. For instance, the streptococcus of erysipelas can be overcome easily by the small phagocytes, as can other micrococci; but in the case of tubercle

bacilli, both the large and the small phagocytes take part in the fray, evidently proving that the bacillus tuberculosis is a formidable adversary. I bring this theory to your notice in the hope that we can elicit some discussion on the subject, as I have never heard the question considered from this point, and I hope to gain some information from it.

CONTRIBUTION TO THE STUDY OF SWINE PLAGUE, HOG CHOLERA AND PNEUMOENTERITIS OF SWINE.

By Dr. W. SILBERSCHMIDT.

(Continued from page 429.)

MORBID SYMPTOMS AND LESIONS OCCASIONED BY THE TWO MICROBES.

Let us study first the local reaction.

The subcutaneous injection of culture or of blood of *swine plague* gave but a slight local reaction. Generally, I made the inoculation of the virus at the ear so as to appreciate the effects better. Fresh rabbits offer a very slight local reaction; after a few hours there is light hyperemia, more and more localized. This is still present at the post mortem, as well as is a local slight œdema. Upon section one observes a little serous liquid slightly cloudy, and the microscope reveals the presence of a large number of bacilli with leucocytes varying more or less in quantity.

This local reaction, so slight upon fresh rabbits, was very extended upon vaccinated rabbits, and especially in those which did not resist to the end. Animals which were well vaccinated presented at the point of inoculation an œdema containing after one or two days a thick pus with abundance of white globules and microbes, these diminishing in number after a few days, though the abscess was still present. The better the vaccination was done the smaller the abscess remained and the quicker it disappeared. Rabbits which by preventive treatment had been but partially vaccinated, presented about twenty-four hours after the injection, an œdema involving the entire ear, which was then drooping, and in-

creasing during the following days and until death occurred. Often the stretched condition of the skin was such that tearing would take place, from which sero-bloody fluid would escape. I have even at times observed the formation of vesicles on the surface of the ear, swollen to the maximum, which I think were due to trophical disturbances produced by the pressure upon the nerves. If life lasted more than five or six days the œdema would increase, as we will see further on.

As to *hog cholera*, the subcutaneous injection of virulent cultures in fresh rabbits was generally followed by a local reaction much more manifest. There was formation of abscess, the ear was drooping, and, as in *swine plague*, the longer the disease lasted the greater was the œdema. When the virus was stronger the local reaction diminished, and much resembled that seen in *swine plague*; vaccinated rabbits offered the same local lesions.

As morbid symptoms of acute cases of the diseases, one must mention, before all, the elevation of temperature, appreciable two or three hours after the injection, and likely to rise to 42° or 42.5° . Afterwards, the animal is taken with diarrhœa, often severe in *hog cholera* until death. By degrees a progressive paresia occurs in the posterior extremities. Death, which takes place in a variable time, as we said above, is preceded by a short period of extensive spasms, and often the rabbit gives an acute cry as he dies.

As to the lesions observed at the autopsy, they were equally analogous in both diseases. The small intestine contained a serous liquid; when drained off with a sterilized pipette, one would after a short time observe, especially in *hog cholera*, a more or less abundant deposit formed of solid particles, and over it a liquid slightly colored and transparent; the contents of the intestines gave a pure culture of *bacterium coli*, having a great analogy to the microbe injected. Peyer's patches were tumefied, but I have not seen any ulcerations. All the mesenteric vessels were dilated and gorged with blood. Another constant lesion is also observed, viz., the increase in the size of the spleen, and its being more

marked in the cases of *hog cholera*. The kidneys, highly hyperemic, presented no microscopic lesions. The bladder was almost always empty. Nothing abnormal in the other organs.

The blood, as well as the various viscera (spleen, liver, kidneys), contained numerous microbes, their number being often much higher than that of the blood corpuscles. Simple coloration with the blue of Loeffler, with the aqueous solution of the methylene blue and the thionine, as well as the double coloring with eosine and Loeffler blue, has given handsome preparations. I have made at each post mortem the examination of the blood and that of the cultures, one on gelosis and the other on bouillon.

The lesions that I have just described are those that are seen in fresh rabbits, dead one or two days after the inoculation.

In the cases where the disease lasts several days, either on account of the weak virulency of the injected liquid, or because the rabbit is only incompletely vaccinated, various other lesions are seen, but not with the same constancy.

The peritoneal serous is strongly injected, and at times presents, especially in the inferior region of the ascending colon, numerous small ecchymosis, which are not so frequent in the small intestine.

In the cases of extension of the local œdema of the ear, the surrounding part of the poll or of the face was ordinarily tumefied and presented a large subcutaneous abscess; in several instances I found a purulent pleurisy on the side corresponding to that of the injected ear, with small abscesses in varying number in both lungs, and with partial hepatization of the pulmonary tissue, principally in the inferior lobes. Cultures with these abscesses or the liquid of the pleuro were always pure.

Once or twice, in cases progressing very slowly, I have seen with the pleurisy a purulent peritonitis, and I have also found, though seldom, it is true, a sero-fibrinous peritonitis.

The presence of miliary abscesses of the liver was noticed four or five times, and twice did they exist in the spleen.

It remains for me to mention two cases where the subcutaneous injection of virus in the abdomen, on rabbits on the road to vaccination against *swine plague*, had occasioned death by the extension of the local abscess to under the skin of the abdomen, of the thorax and of the back.

The brain, examined on several occasions, presented no lesion.

In the cases of acute intoxication the symptom, diarrhœa, was present as after the injection of virulent culture; often, especially after injection of toxine of *hog cholera*, there was also tumefaction of the spleen. In chronic cases, by opposition, one would notice loss of flesh, cachexia, marked diminution in the size of the stomach, and especially an atrophy of the spleen, often excessive. Of course, in both cases cultures were sterile.

To resume, the anatomical lesions are analogous in the acute cases of *hog cholera* and of *swine plague*; the more intense diarrhœa and the more marked increase in the size of the spleen are only quantitative differences, perhaps connected with the little longer durations of the disease; they are not sufficient to differentiate *hog cholera*.

The local reaction after subcutaneous injection does not either allow the distinction of the two diseases. At first this reaction is marked in *swine plague*, but we have seen also that in *hog cholera* it diminishes as the virulency increases. Besides, in the cases of partial and incomplete vaccination against *swine plague*, the tumefaction was much larger than with the injection of the virus of *hog cholera* to a fresh rabbit.

From these facts I believe I am authorized to conclude:

First.—The anatomical lesions and the morbid symptoms do not allow the differentiation between the two diseases.

Second.—It is impossible, as done by several authors, to distinguish the two diseases by the lesser or greater extension of the purulent formations, so long as we have demonstrated that, for one and the same disease, one can observe all degrees of local reaction, from the simple circumscribed hyperemia to the generalized abscesses with purulent pleurisy, purulent peritonitis and purulent collections in the lungs.

Third.—In the numerous post mortems that I made upon hundreds of rabbits I have failed to observe a pulmonary localization of the lesions in *swine plague*, or a rather intestinal localization in *hog cholera*.

INFECTIOUS PNEUMO-ENTERITIS OF SWINE.

Mr. Metchnikoff has kindly given me a number of tubes of blood from rabbits dead after the injection of the bacillus of infectious pneumo-enteritis of swine. This blood, kept for more than a year, contained only a small number of living microbes. I obtained a pure culture after an injection of 2.5 c.c. of this blood to a rabbit, and it is starting from this culture that I made my experiments.

To the morphological point of view, the microbe that I have studied presents a great resemblance to my bacillus of *swine plague*: small dimensions, transparent colonies upon gelosis, and no formation of gases in glucosed bouillon in the presence of carbonate of lime. The virulency was weak, less constant, and was nearest that of *hog cholera* at first. With subcutaneous injection it required 0.2 to 0.3 c.c. of culture or of virulent blood to kill a rabbit with certainty. In one case the rabbit resisted an injection of 0.1 cc., and another died after only twenty-two days of cachexia. According to the dose death occurred in eighteen hours, or between two and three days.

The intravenous injection of $\frac{1}{2}$ cc. and more killed between twelve to twenty-four hours in average. The local reaction, which, as we have seen, acts in inverse proportion to the virulency, was always considerable, and was even greater than that produced by the subcutaneous injection of *hog cholera*; the injected ear was always the seat of a quite large œdema, with formation of abscess. At the post mortem the lesions were analagous to the two other diseases.

The guinea-pig dies in from twelve to twenty-four hours after a subcutaneous injection of $\frac{3}{10}$ to 1 cc. of virulent blood; a mouse, which had received $\frac{1}{10}$ cc. of the same blood, died the eighth day.

The toxicity of the sterilized cultures, and of the blood,

is also very weak; quantities of 2 and 2.5 c.c. were tolerated in intravenous injections without noticeable symptoms; a rabbit, which had received 2.75 cc., presented after forty-eight hours a diminution in weight of 150 grammes.

My experiments were not so numerous as for the two microbes studied previously.

It is much easier to vaccinate rabbits against pneumo-enteritis than against *swine plague* and *hog cholera*.

I have obtained this vaccination by repeated injections: 1st, of small quantities, $\frac{1}{4}$ to 1 cc. of virulent blood more than a year old; 2d, with fresh or aged virulent blood, sterilized to the water bath at 58°; 3d, in one case, with injections of very small quantities of cultures of blood, both virulent.

Here are some of the results of these modes of vaccination:

No. 238.—1k-980; 3 intravenous injections of aged non-sterilized blood. After the third injection of 1.25 cc. great loss in weight (1k-575 the third day). The rabbit recovers and stands two trials of injection.

No. 274.—2k-15; 2 injections of 2.75 cc. and of 2.5 cc. of virulent blood sterilized for an hour at 58°. The rabbit supports three trials; the first without witnesses, that of the third dies within 45 hours.

No. 232.—2k-300; five injections; altogether 8.25 cc of aged sterilized blood. The rabbit resists the trial injection and weighs 2k-500 a month later. The witness dies with cachexia.

No. 284.—18-IV, 1k-485; injection of one-tenth virulent bouillon culture; large œdema, ear drooping; on the 27-IV, 1k-345; the 21-IV, 1k-580; second injection of 1-40 cc. virulent injection; the 23-V, 1k-800; the 1-VI, 1k-960 a third injection of one-tenth cc. of virulent blood; 11-VI, 2k-135.

No. 255.—27-III, 1k-640; subcutaneous injection of 1-20 cc. of bouillon virulent culture; 28-III, 1k-140; œdema of the ear; 31-III, 1k-690, still œdema; 7-IV, 1k-480, œdema smaller, there remains but a large abscess well outlined; 14-IV, 1k-265; 17-IV, 1k-120. Dead the 18-IV, in the morning. The blood and the cultures remain sterile.

As can be seen by these, the microbe of the pneumo-enteritis of swine which I have used does not differ from the two microbes previously studied except by its less virulence and the small toxicity of its products; it is probable that, as for *hog cholera*, successive transfers by rabbits would have increased its virulency. Cultures offer much less regularity in their action as long as the virus has not reached a certain intensity. I made the same remark with *hog cholera*.

(To be continued.)

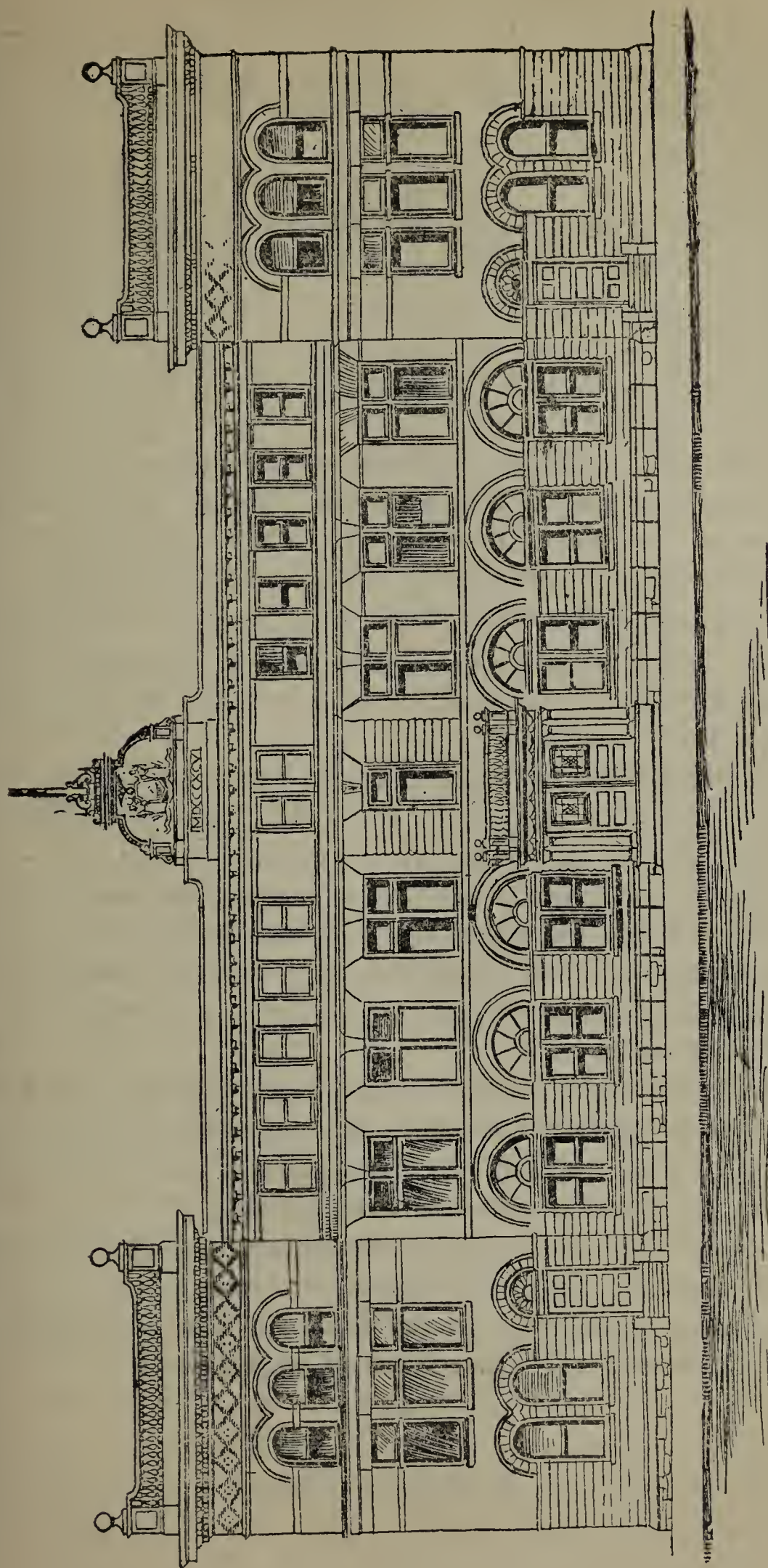
NEW SCHOOL OF VETERINARIANS.

ITHACA, N. Y.—At the two last sessions of the Legislature bills were passed appropriating to Cornell University the sum of \$150,000 for the purpose of building a veterinary college. This appropriation is for the building alone, the State agreeing to the following resolution, which was adopted by the Board of Trustees of Cornell University, June 20, 1894:

Resolved: That the Board of Trustees authorize the location on the university grounds of the State Veterinary College, and express their willingness, when the State shall have made sufficient provision for buildings, equipment, and maintenance, to administer the State Veterinary College in such manner as may be hereafter agreed upon, subject, however, to the condition that the university is not to undertake any part whatsoever of the financial responsibility connected with the State Veterinary College, whether for buildings, equipment, care, experimentation, investigation, instruction, or any other object; though, for the sake of reducing the cost of maintenance to the State, the university consents to furnish instruction to students of the State Veterinary College in such scientific and other subjects as are now or may hereafter be included in the curriculum of the university, upon such terms as may be deemed equitable, regard being had to the fees paid by university students for instruction in such courses.

From this resolution it will be seen that the State is bound to make further appropriations for the maintenance of the college. This will seem just when it is known that the object of the college is not simply to give instruction to students, but also to advance veterinary science, and care for the interests of animal industry in the State. In this respect the veterinary college resembles the College of Agriculture, which is both a department of the university and an experiment station of the State.

The veterinary college group consists of six buildings, as originally planned. The first, the main building, will contain a large museum, two lecture rooms, laboratories, and research rooms for the professors. The second will be known as the operating building, the third as the mortuary, the fourth will contain the general ward for the non-contagious medical and



NEW YORK STATE VETERINARY COLLEGE.

CORNELL UNIVERSITY, ITHACA, N. Y.

surgical cases, the fifth the contagious wards, and the sixth will be a small college for the student groom and his assistants.

The front of the main building will be 139 feet in length, and with a projecting one-story wing the building will be 175 feet deep. Adding to the depth of the main building the five smaller buildings in the rear, the whole college will extend back from East Avenue fully one-eighth of a mile. The main structure will be three stories in height, with a large basement.

The material of which the building is being constructed is yellow pressed brick, with a little stone work. What stone is used will be Indiana limestone and Ohio sandstone, with Gouverneur marble for the finishings and trimmings. The basement is built entirely of Gouverneur marble. The interior will be of mill construction—a slow-burning material, which has been approved by the underwriters for the Factory Mutual Fire Insurance Company.

Every precaution has been taken to give facilities for medical and surgical treatment in the college according to the most recent antiseptic theories. All surfaces affected by contagion will be arranged so that they may be cleansed daily.

Enameled brick and joints covered with patent enamel that resists the action of all chemicals will be freely used. The plumbing and draining will be carefully done, so as to be of the highest efficiency.

Work on the buildings was commenced last July. A large force of men and teams have been at work, and, although only three months have elapsed since the ground was first broken, the walls are up and well toward the third story.

The plans for the buildings were drawn by Prof. Francis E. Osborne of the Cornell Faculty in Architecture. When completed, the college will be the finest devoted to veterinary science in the country.—*New York Weekly Times*.

EXPERIMENTAL PATHOLOGY.

ACTUAL CONDITION OF THE QUESTION OF IMMUNITY.

By E. METCHNIKOFF.

The theory according to which bacteria are destroyed by the secretions of eosinophile leucocytes is refuted by positive facts. The theory of the phagocytes is in harmony with all the facts established since its foundation. The examples which have been claimed as exceptions of the function of the phagocytes, septicemia in mice, diphtheria, anthrax in crustacea and mollusca, after a close examination, proved to belong to the theory of phagocytes after all. The choleric peritonitis of guinea-pigs likewise belongs to the category of infectious diseases in which the anti-bacterian function of the phagocytes is most evident. The phenomena of degeneration of the vibrios in the peritoneal liquid of hyper-vaccinated guinea-pigs, as described by R. Pfeiffer, are explained by an action of the products of the leucocytes, modified by the influence of the hyper-vaccination. The destruction of the microbes in the interior of phagocytes may take place in an acid media, according to the opinion of A. Kossel, upon the action of its nucleic acids. But this destruction can also take place in an alkaline media, in the contents of the phagocytes.

Phagocytes do not react only against the invasion of the microbes, but also in the intoxication of the organisms by various poisons. Their part has been shown (specially by the school of Kober) even for such inorganic substances as iron and silver. From all the progress made in the last few years, immunity must be considered as the result of a cellular activity. Among the elements which act in immunity the first part must be attributed to the phagocytes.—*Ann. de l'Inst. Pasteur.*

INOCULATION OF MILK COWS WITH CULTURES OF THE BACILLUS DIPHTHERICÆ.

By KLEIN.

He has succeeded in inoculating the bacillus of Loeffler to cows which had calved recently, by injecting a moderate quantity of virulent culture in the subcellular tissue of the

shoulder. Ten times he obtained a local swelling, more or less developed; six times general symptoms; five times the appearance of small vesicles on the teats; he has found the diphtheria bacillus constantly in the liquid of the vesicles and twice in the milk.—*Revue des Sc. Med.*

ON THE USE OF MALLEINE IN MAN AND ANIMALS TO THE POINT OF VIEW OF DIAGNOSIS AND OF THE THERAPEUTY.

BY A. BONOME.

The animal which seems the least sensitive to malleine and the most proper to establish its diagnostic value is the rabbit. The cat comes next, the guinea-pig and the dog resist much more.

The injections of malleine to horses cannot be considered as positive means of diagnosis of glanders; the experiments of Bonome, made on 32 horses, agree with the conclusions of the French commission appointed by the Secretary of War. Out of the 30 horses to which an injection of 1 to $1\frac{1}{2}$ c.c. of malleine had been made, 24 showed a more or less severe febrile reaction, 6 did not react. Of the 24, 19 were killed, and, with one exception, all had the manifest lesions of glanders. Of the other five which were not destroyed, one only, by inoculations to guinea-pigs and dog and by cultures, gave proofs of glanders. Thus the febrile reaction that is obtained through malleine is not a positive criterion of the existence of glanders in the horse.

The author has had occasion to treat, with malleine, a case of human glanders. This observation, unique at this day, brings him to the following conclusions:—

1st. Malleine obtained by cultures gives to the man affected with chronic glanders a reaction far less violent than in the horse. Two or three drops are sufficient, instead of 1 c.c., as required by the horse. The intensity of the reaction is proportionate to the dose, but goes on decreasing as the injections are repeated.

2d. Each injection gives rise to an oedematous and painful swelling, which rapidly disappears.

3d. During the days following the injection, the temper-

ature often drops to a very low degree, 35.5° , for instance, and stays there for 24 to 48 hours, without any objective or subjective symptom.

4th. The reaction is accompanied with very abundant polyuria, even with profuse perspiration. The urine is almost always thoroughly alkaline.

5th. The action of the injections of malleine upon the local manifestation of glanders has proved very efficacious.

The author has also attempted to establish the curative value of malleine on guinea-pigs, dogs and horses.

In the first, it is malleine obtained with the aid of the serum of bovines which seemed to have the greatest efficacy. In dogs, the one obtained by the culture of the bacillus in the laboratory, and in horses, that obtained from the serum of fat. A recovery has been obtained in the horse, which, so far, lasts for a year.—*Ibid.*

REPORTS OF CASES.

“ I hold every man a debtor to his profession ; from the which as men do seek to receive countenance and profit, so ought they of duty to endeavor themselves by way of amends to be a help and ornament thereunto.”—*Bacon.*

FOUR CASES OF INGUINAL HERNIA.

S. R. HOWARD, V.S.

CASE I.—Subject, twelve-year old Clyde stallion. Two months before the last sickness this stallion had what was supposed to be a slight attack of colic, which lasted about twenty minutes. I was called, and found him about well, munching hay, and pulse and temperature almost normal.

Groom stated that the stallion had never been sick before, but as soon as he had watered him that eve, he appeared to get colicky and rolled over several times. We watched him about an hour, and then I left him well, as far as I could see.

Two months later I was again sent for. Found him standing with head over lower door of his box, breathing very quick and vigorously. Pulse about seventy-five or eighty ;

no sweating or looking at his sides. He would stand thus for about ten or fifteen minutes and then turn quickly around several times and rub his rump vigorously against the wall. This was done by turns for at least two hours. Then he took a notion occasionally to lie down and roll completely over very quickly, get up, shake himself, and then appear much better for a few minutes.

This horse was naturally very restless and often vicious. I could scarcely approach him, much less handle him, because of his disposition to bite and kick. Twitching made him worse. In order to give him rectal injections he was put in a very narrow stall and a gate placed behind him, and a pole on his side. Could not drench him, and in an attempt to examine his scrotum I hurt my arm severely against the pole. If I had to do it over again, I would throw him and then examine. At intervals I gave him hypodermics of small doses of morphine and soap-suds injections containing some sulphuric ether. Several times he was exercised at end of a pole. He did not lie down more than four times altogether, neither do I recollect of his looking around at his sides until death was upon him. He passed manure several times in normal quantities, and urinated very frequently in very small amounts and in strong spurts.

At 2 A.M. I examined him per rectum, very unsatisfactorily on account of his restlessness. After midnight he began to sweat in the flanks, and got very restless, and once in a while kicking with one foot. Still he had intermissions of ease, and, what I especially wish to record, he never sat on his haunches, or looked at his sides until a few minutes before he died.

I was sure of some structural change, but had no definite idea as to what it was save that it was urino-genital in character. One testicle appeared slightly larger than normal. I managed to get hold of it but discovered nothing wrong. I admit my examination was at fault, but I did the best I could under the circumstances. When attempting to do anything for him he would act with the violence of a case of phrenitis.

After two o'clock A.M., he stood with head pushed into a corner, breathing very deep and rapidly, sweating profusely, never leaving corner or growing any easier until only ten minutes before he died, ten o'clock A. M. He then staggered back, sat on his haunches a few minutes and died.

His sufferings and struggles at pushing his head against the wall were terrible to see. I attempted several times to chloroform him with sponge on stick, using chloroform and sulphuric ether, but with only slight effect toward relief.

The absence of several symptoms of this case are remarkable. The loss of feeling and symptoms of gangrene were never present. That peculiar motion of the head indicative of recent inguinal hernia, and the later extreme prostration were also absent.

I suspected hernia, but rather thought it to be something else, and on opening him expected to find considerable change of some kind, but did not know what exactly to expect. I found, to my surprise, everything apparently normal, save near the stomach, about six inches of small intestine, black as coal, slightly smaller than the rest and containing one-half of fæces. I will add, right here, that I was at sea and did not suspect it to be a previously hernial intestine displaced by handling carcass after death. This, of course, is what it was.

CASE II.—Subject, large draft stallion, eight years old. The owner, who is a good horseman and blacksmith, at noon turned the stallion in paddock for exercise. At supper-time he found him apparently all right, except slightly lame in one hind leg. He examined foot and fed him his usual feed, of which he ate some, but mincingly.

About dark, owner heard noise among his stallions (he kept three), and in looking in he found this one sitting on his haunches, looking around at himself. He sent for a Quaker, who does considerable doctoring, and about midnight I was sent for.

I found him down, easy, but near death. Pulse one hundred and fifteen over heart, cold, unable to rise, temperature ninety-eight degrees; refused to operate; died in eight hours from time severe pain set in.

Shortly before death took place he arose, staggered for a few minutes and fell dead. Found about fifteen inches of small intestine in inguinal canal and scrotum.

CASE III.—Subject, large draft gelding, six years old. Several months before, I had examined him for owner, to decide the nature of an enlargement in groin. I diagnosed small chronic inguinal hernia, and suggested an operation. The owner, a very penurious old gentleman, would not admit of such a "cruel operation." Owner said the horse passed manure very frequently, but only a ball or two at a time.

Several months after this I was called in the night to see same horse. Found him presenting all the symptoms of strangulated inguinal hernia, pawing, sitting on haunches, perspiration on face and in groin, assuming position on back, kicking at belly, stamping violently, etc. The hernia was very tense.

I diagnosed strangulated inguinal hernia. I gave him a big dose of chloroform in oil, and threw him. The hernia to the touch seemed to contain more gas than anything else. Introduced small trocar and canula to allow gas to escape from imprisoned intestine, but with signal failure.

I then manipulated per rectum and externally at same time for about half an hour, with no effect. Then informed owner nothing would do any good but an operation, and that the immediate and urgent interference was indicated. This the old gentleman refused to listen to and declared he believed the horse only had colic anyway and asked me to stay with the horse for an hour or two and treat the horse for colic.

I stayed until midnight, but seeing the horse was getting worse all the time, and the owner positively refused to let me operate, I left anodyne medicine to be given, and went to bed with the confidence that the horse would be dead in the morning.

At 7 A.M., to my astonishment, he was no worse, but acting just the same. Owner would not listen to the suggestion of an operation, but requested rectal injections and colic medicine be given; this was done. Told owner I wanted him to get some one else to doctor his animal. He said he

would take him to his farm (one mile distant), and doctor him himself, and this he did.

The horse lived three days and nights, and I was told he died without a struggle. They drove him at a trot all the way to the farm and put him in a large roomy shed, where he staid until he died. After there a while he appeared better, ate nothing, but drank quite a number of buckets of water.

I opened him within an hour after death; the carcass had not been moved. I found a free portion of small intestine about a foot in length, slightly injected and contracted, and in my judgment it might have become normal if the horse had not been killed by dosing with everything the neighbors and the imagination of the owner suggested.

I think the bowels had been released several days. There was no peritonitis. Now here was a case of hernia undoubtedly partially strangulated for several days at least, and had reduced itself, and, what is strange to me, it had not adhered in scrotal sack, it being a chronic hernia. The inguinal ring was dilated. He died from the effects of a quart of oil, etc., being poured into his lungs by nostril.

CASE IV—Subject, six-year-old trotting stallion. In about a year before his last sickness I had been called several times to see him, but each time he appeared to be well by the time I reached him. They said he appeared to have colicky pains, roll over, paw and have intermissions of ease.

The last time he was taken they sent for an authority, who claimed the horse only had colic. Next day, at noon, I was summoned, but when I saw the poor brute I refused to operate, for it was plain he was under the anæsthesia of death. He died in an hour from the time I saw him.

I found a small loop of small intestine inclosing one ball of dung imprisoned in the inguinal canal. No indication of chronic hernia. The very small knuckle of the loop distended with gas was outside of external ring.

The report of these cases I trust may be of some benefit to some earnest practitioner who may profit by my experi-

ence, for they are not like some I know of, they are truthfully related.

The report of odd and fatal cases accompanied with accounts of post-mortem lesions can not help be of inestimable value to busy and conscientious practitioners.

For myself, I am perfectly willing and glad to wade through long, vague articles about antitoxins, tables of temperatures, emulsions of gelatin in bouillon, c.c.s., immunity of inoculated rabbits and mice, sterilization, streptococci, anatomy of parasites, etc. But, after all, one cannot help but think how little such news helps a practitioner practically.

The advantages of a higher education no sensible man denies, and I have no fault to find with it, but why can we not have more practical articles, reports of cases and points in practice than we have hair-splitting articles filling up our journals most of the time. Still let us gladly welcome any and all original research.

In the last ten years, not counting the present volume, the AMERICAN VETERINARY REVIEW, the leading veterinary journal of America, has printed about three hundred cases reported by subscribers and four hundred and fifty original articles, many of which were translated productions.

Should this proportion continue to obtain? Who is to blame? Surely not the able editor. Looking over back numbers of the REVIEW, it is seen sometimes only one little case occupying about half a page.

If it had not been for the adamant determination and tireless energy of Prof. Liautard, who in the face of tardily paid subscriptions and needy encouragement, we could not have with us the ideal AMERICAN VETERINARY REVIEW of to-day. At the same time credit is due to his collaborators.

It is said experience is the greatest teacher of all. Let us have some of it.

"The stream of life bears with it now all the errors and failures of the past, the wreckage of all the philosophies, the fragments of all the civilizations, the wisdom of all the abandoned ethical systems, the debris of all institutions, and the penalties of all mistakes."—*Sumner*.

FATAL INTESTINAL HEMORRHAGE.

BY THE SAME.

Subject, Rene, 2:26, sire of Belle Archer, 2:12³/₄, and other trotters.

On 15th of Oct., at 3 A.M., groom heard struggling in barn and upon investigating found the above subject on his back with feet against box-stall door. He turned him over and he then got up and went to eating and appeared all right, save that he presented the appearance of having struggled some considerable time in above situation.

The box is fifteen feet square, square corners and lined, save at the wide door, which closes from outside, thus leaving an offset the width of door and depth of sill. At daylight a large clot of blood was found on the straw.

I was called then and found Rene easy, eating, pulse about fifty-five, though somewhat irregular, mucous membranes good color, and temperature normal. While examining him he passed a clot of blood about one and a half foot long, a cast of the rectum.

Kept him warm and gave several large buckets of hot water as rectal injections, and one ounce dose of tincture of ergot. In the course of an hour or two he appeared better. Left ergot to be given every three hours.

Visited him next morning. He had passed four clots much smaller, but no fresh blood. Pulse ninety, extremities cold, penis pendulous, no pain, and taking a few mouthfuls occasionally. Gave whiskey with ergot and digitalis, and hot water injections every three hours.

Visited him a number of times that day and night, and gave medicine and injections as before. During the day he passed several clots which looked like casts of floating colon.

In evening pulse over heart one hundred, very weak; staggering occasionally, and presented all the appearance of an early dissolution from exhaustion. Died that night.

Never exhibited any pain at any time. At autopsy found large intestines normally full of fæcal matter. Found no lesion on outside of intestines, or trace of anything wrong on their outside save that dark color from incased clotted blood.

I opened bowels from rectum forward, and at greater curve of sigmoid flexure of colon I found what I was looking for, i.e., the cause of bleeding.

I found an adherent clot about the size and shape of half a hen's egg. Removed it carefully, and upon washing the bowels found a loose flap of mucous membrane, corresponding in size to above clot and adherent by about an inch of its edge to the bowels.

There was no trace of an old ulcer, or any enlargement of blood vessels; on outside of bowels the surface was normal. Plenty of fæces posterior to injury and nothing in them that would produce mechanically an injury of this kind. This flap of mucous membrane, under strong magnifying-glass appeared normal, and had very ragged edges.

Moral: Have box-stalls smooth all around, corners rounded and lining sloping in.

EXTRACTS FROM EXCHANGES.

FRENCH REVIEW.

RUPTURE OF THE INTESTINES PRODUCED BY AN CEGAGROPILE.

By MM. NEYRAUD AND LEBLANC.

This cause has been seldom reported—hence its interest.

An aged mare is refusing her morning meal and is sent to the infirmary where she is placed on observation. Towards the afternoon she manifests some colics and was given a simple treatment, which gave but little relief. The next day she is considerably worse. She stands quiet, in a comatose condition, with her legs stretched apart, has marked tympanitis of both flanks, more on the left; the respiration is accelerated and snorty, the nostrils dilated, the mucous membranes pale; the pulse is not counted as the artery cannot be felt under the skin. The mare has no passages.

In the presence of this series of symptoms a positive diagnosis could not be made, except that of an internal hemorrhage. The mare died in a short time and at the post-mortem

a longitudinal rupture was found towards the union of the colon and the rectum; it measured 10 centimeters (about 5 inches) in length, with ragged edges, soft, hemorrhagic and with clots adherent to the borders. Between the edges of the laceration there was a cylindroid, large œgagropile, partly in and partly out of the intestines, and weighing about 300 grammes. Besides this special lesion the abdominal cavity and its contents showed more or less intense inflammation with some gangrenous spots in the course of the intestine.—

Rev. of Zootech.

ANEURISM OF ONE OF THE BRANCHES OF THE LEFT FASCICULUS OF THE GREAT MESENTERIC ARTERY OPEN IN THE FLOATING COLON OF A HORSE SUFFERING WITH PARIETAL ENDOCARDITIS OF THE LEFT HEART.

By MM. DUCHENE AND CADEAC.

The difficulty of diagnosis of cardio-vascular affections is well known, and their complications are often unsuspected.

An anglo-normand, 18 years of age, is laid up with colics. On examination a champignon is found in the inguinal region, for which the horse is operated and rapidly recovers. Later on he is again suffering with dull, intermittent colics, the mucous membranes are pale, the movements of the heart strong and accelerated, micturation is difficult, the urine is dark yellow, viscous and very alkaline. The fæces are at times mixed with blood. The animal began to lose flesh. Auscultation and percussion of the heart failed to detect the strong beatings of that organ in the previous days of his sickness. The fæces are of a dark coloration, and when at a later period they are extracted from the rectum they are mixed with dark blood. Rectal examination reveals toward the cæcum a large tumor which is suspected to be an aneurism of the posterior aorta, or one of its branches. The horse dies suddenly. At the post-mortem the following lesions are found: a rupture of the rectum of recent date; nothing peculiar in the chest, except the heart, whose left ventricle has its endocardium covered with rough, red and irregular granulations,

which are also found on the surface of the mitrale valve. Posterior to the liver, on the aorta, there is a tumor of the size of a child's head, weighing about six pounds, with irregular and rough surface and surrounded by peripheral infiltration. This tumor is made of white fibrous tissue, and is in connection above with the aorta, the posterior vena cava, the inferior face of the right kidney, and downward with the base of the cæcum and the origin of the floating colon. In its center there is an irregular cavity containing dark clots, but no strongyli. Cleared of its contents, it presents several openings, one communicating with the great mesentery and continued with the aorta; another opens in one of the arteries of the small intestine; and a third communicates with the floating colon by an opening imperfectly closed by a fibrous clot.—*Ibid.*

ON THE BEST MEANS OF ANÆSTHESIA FOR ANIMALS.

By M. L. GUINARD.

In a long article published in the *Journal of Zootechnie*, the author, after considering under the different heads, first, the necessity to avoid as much as possible the anterior air passages in the administration of chloroform, which is generally dangerous; second, the mixed methods of atropine, morphine and chloroform combined, or of morphine and chloral; third, the mixtures of ether and chloroform; fourth, etherization proper, which he considers as the chosen method for anæsthesia, in saying that “among the good processes of anesthesia known and used for animals, simple etherization is at the head as the most commendable, by its facility in use, its regular march, its innocuity, the rapid disappearance of its effects, and the habitual simplicity in its effects,” and having also mentioned the effects of ether and chloroform on animals suffering with heart or lung disease, concludes that outside of some special contra-indications, anæsthesia ought to be used in veterinary surgery a great deal more than it is, and especially for small animals; that complete is less dangerous than partial anæsthesia; that there are two principal modes to produce it, by simple etherization, or by the mixed methods

of morphine and chloroform, or better, morphine and ether. Chloroformization remains what it has always been, a quick and sure, but specially dangerous method, if not used with the greatest precaution; and that whatever mode of anæsthesia be used it is always dangerous in patients affected with heart or lung diseases.—*Four. of Zootech.*

CYST ADHERENT TO THE ŒSOPHAGUS.

By MR. ADENOT.

A steer which has for several years been used at draught work and is comparatively well kept, on account of the heavy task made upon him, is suddenly taken with tympanitis, which lasting for some time has to be relieved by the administration of a good purgative. The animal appears better, and when the winter season arrives he is left in the stable at rest with fair feeding, but instead of improving, he gets worse; another dose of physic brings him back to apparent health, when again the tympanitis returns with more severity; he is then tapped with trocar, and with repeated alternations of improvement and relapse he is destroyed for the butcher.

At the autopsy, every organ, thoracic or abdominal, is in perfect normal condition, but on looking toward the base of the heart, a large pouch is observed, adherent to the œsophagus, but free from any communication with it. This sac does not contain pus, but a great quantity of yellow citrine fluid of cystic nature, in the midst of which floats a number of solid disks of various dimensions.—*Ibid.*

BELGIAN REVIEW.

MESENTERIC ABSCESSES IN STRANGLES.

By Mr. VERLINDE.

Considering the scarcity of literature on the subject, the author, after having searched in the various works on strangles, Bouley, Zundel, Champetier and others, and hav-

ing found the records of only two fatal cases published in the *Recueil de Medecine Veterinaire* in 1892, records two other cases which he had occasion to observe in his practice as army veterinarian. The first case is that of an animal which had strangles, mild in appearance, but seemed to have recovered, and was put to work, when he was taken with abdominal pains, which assumed such a character that he was destroyed. The post mortem revealed lesions of long standing, no doubt going back to the time of his first ailment. A large quantity of purulent, gray-reddish, foetid fluid with floating masses of pus and necrosed tissues. The peritoneum with chronic lesions, extending upon the various parts of the intestines and gluing the folds of the small intestines together. Among these a large phlegmonous cavity adherent to the thickened peritoneum and situated in the left flank and near the left kidney.

The second case is somewhat similar, the horse, however, dying from a rupture of the stomach, but presenting at the post mortem not only the lesions of the torn viscera, but also a large abscess of the size of a child's head and containing granular pus, white-gray in color, odorless and undergoing degeneration. This was also situated in the left side of the abdomen and near the left kidney.

The author completes his report by the consideration of the pathogeny, symptomatology, etc., etc., of this serious complication.—*Annales de Med. Vet.*

A CASE OF PHARYNGO-LARYNGEAL PARALYSIS.

By Mr. J. HAMOIR.

This is an interesting case of a young horse which was affected with symptoms of pharyngitis in the month of February, 1894, some three months later giving evidence of laryngeal complications which justified the diagnosis of paralysis of the two apparatuses, the pharynx and the larynx. Besides the usual manifestations of impossible deglutition, abundant salivation, discharge through the nostrils of food mixed with mucus, an intermittent roaring occurred at

different intervals during the whole length of the disease, which did not yield to treatment until late in December of the same year. The treatment consisted of repeated counter-irritations over the throat, tracheotomy to relieve the roaring, strychnia, iodide of potash, arsenic, with aromatic and anti-septic fumigations. Electricity was also tried but had to be abandoned after a month's trial. Arsenious acid internally, given daily, seemed to give the best results.—*Ibid.*

URINARY TUMOR.

By MM. HEBRANT AND GILSOUL.

Among some clinical cases recorded the authors write a case of an unusual occurrence. A young cow having had a somewhat difficult labor during which the vulva had been lacerated in several places, after a certain amount of febrile reaction, presented on the inside of the left leg, a little above the hock, a round tumor, as large as a man's head, which was first considered as of a septic nature, a sequelæ of infectious metritis. Being called to see her, the writers found the tumor fluctuating, painless, but of doubtful nature. An exploration made with a fine trocar gave escape to a clear liquid, transparent, yellow in color, and having a strong marked odor of urine. It was urine.

On the inferior plan of the vulva, a little back and on the left side of the urinary meatus, there was an irregular wound through which the finger could be readily introduced, which communicated at its bottom with a subcutaneous tract into which the urine had run and gathered in the tumor below. The tract was cleaned with carbolic water, the edges of the wound of the vulva cauterized and closed with a tent of wadding, replaced every time it came out. The recovery took place in ten days.

PROLAPSUS RECTI IN THE DOG.

By L. P. GOBBELS.

After giving the description of pup pug, which has a prolapsus of the rectum of several centimeters (some 3 or 4 inches),

the author having failed to obtain a constant reduction by the ordinary manipulations, taxis, pads, or sutures of the anus, had recourse to the application of the metallic ring which is employed for the contention of the uterus in a cow with some modification. Instead of giving it the form of a triangle, he merely flattened the ring sideways to give it an oval shape, and slightly bent it to adapt it to the hollow of the anus. This ring, well padded with oakum, is applied in the anal hollow after reduction of the prolapsus, and kept in place with four elastic strings or bands to the collar of the animal, to which a stiff collar of pasteboard is put on to prevent its biting. The recovery was complete.

In a subsequent article, Prof. Degive recalls another form of treatment, which consists in passing round the anus, at some little distance from its border, a string which is carried round the organ in and out of the skin, and brought back at a point near its starting insertion. By traction upon both ends of the string, the skin of the anus is drawn close at will and secured by a knot, similar to the string on a tobacco bag or a purse, and still the exploration with the finger or the passage of fæces softened by rectal injection can take place.—*Ibid.*

AMPUTATION OF THE UTERUS IN THE SOW.

By M. ADRIAEN.

The author reports two cases of this operation which differ somewhat in the manipulations applied, and were followed by different results. In the first animal the amputation was done by the application of a strong elastic band and amputation of the protruding uterus. There was but little hemorrhage, the uterine stump soon withdrew in the vaginal cavity and the animal did not seem the worse by the operation, except that her milk gave out and her litter soon died from starvation. Ten days later the sow was taken with severe pains, with violent efforts as if severely constipated, and though she received a cathartic, these becoming more and more serious, she was killed. At the post-mortem a large tumor was found at the bottom of the vagina, containing a small quantity of

pus. This tumor was pressing upon the rectum and interfered with defecation.

In the second case the same manipulations were carried out as far as the amputation, with the exception that to prevent the drawing in of the strings a wooden clamp was applied back of the elastic ligature. This dropped out after seven days and the sow felt well all the time, raising a litter of seven young ones.

To the application of the clamp the author attributes the success of the second operation and the prevention of the irritation which gave rise to the formation of the abscess found in the first instance.—*Ibid.*

GERMAN REVIEW.

BY W. V. BIESER, D.V.S.

TETANUS TOXIN.

An interesting paper by Nocard, the scope of which covers the serum therapy of tetanus in veterinary medicine, is likely to cause ripe interest amongst the profession. In a clear and concise way he reminds his readers of the theory of serum therapy. As regards the poison of tetanus, he affirms the following: In a guinea-pig the fatal dose is $\frac{1}{500}$ cm³.; in a strong horse, $\frac{1}{15}$ cm³. In the case of repeated injections at more or less frequent intervals of small doses of pure serum, or of serum heated to 65° or 70°, or combined with Gram solutions (slightly iodized), it is found that a time arrives during which the animal experimented upon can stand a comparatively large dose with impunity. Nocard could, in such cases, inject 300 cm³ into the jugular of a horse without toxic after-effects. How does the immunity set in? We know that the assertions of Behring and Kitasato, pupils of Koch, concerning this question are disputed by Roux. Whatever the hypothesis, the above facts remain true.

Following is the result of the serum injections:

1. Immunity invariably sets in as a result of the serum injections.

2. Immunity lasts only from 2 to 4 weeks.

3. The curative effects are surer to ensue the sooner the animal is inoculated with the specific microbe or with the ptomaines separated from the bacillus.

The serum therapy of tetanus unfortunately has a drawback. While in diphtheria we can inject diphtheritic serum at the beginning of the illness, at the time of the appearance of the false membrane, and can thus anticipate blood-poisoning, important in tetanus, we cannot anticipate blood-poisoning by the injection of tetanus serum, because, by the time the diagnosis of tetanus is made, the blood has been poisoned to a greater or lesser degree. Nocard thinks that the tetanus serum can only be regarded in the light of a prophylactic; he believes that it will not affect the course of a tetanus already established.

But in regions where tetanus abounds idiopathically, or where it follows wounds or surgical operations, two serum injections of 10 cm. each in the course of fourteen days will render the animal immune for a period of one and a half to two months.

The serum keeps its efficacy and purity for at least six months provided the flask is kept from heat and light, and opened only at the time of the injection.—*Oest. Monatschr. f. Thierhkl.*

IMMUNITY AGAINST FOOT AND MOUTH DISEASE ESTABLISHED BY POTASSIUM IODIDE.

Prof. P., of the University of Prague, has made a discovery important enough to be brought to the notice of our readers.

For the purpose of curing syphilitic children, he made an agreement with a farmer to dose two of his cows with iodide of potash so that he could give the milk thus iodized to the children. One of the cows received 12 grams of iodide of potash for eight weeks, the other for ten weeks; these were housed with 68 other cows. During this time, foot and mouth disease occurred in the stable. At first two cows sickened, then others in the neighborhood. To shorten the

course of the disease, the proprietor infected the remaining cows with the toxic frothy discharge of the sick ones.

Among the latter were the two dosed with the potassium iodide. All the cows contracted the disease in a mild form, with the exception of five which showed severe symptoms. But the two iodized cows, although in the midst of the sick ones and although infected in the same way, remained immune. The effect of iodide of potash is analagous to that in the human subject. In a few days the symptoms of acute iodism showed themselves, viz., increased nasal secretion and salivation, appetite not diminished, thirst increased. In a few days the symptoms ameliorate, and then remain stationary during the period of the potassium iodide administration. The secretion of milk is increased and remains so to the end of the administration of the potassium iodide. The cows give 16 to 18 litres instead of 11 to 13, inasmuch as they take more water.

One cannot say what the value of this one observation is, nor how long immunity lasts, nor whether iodide of potash has a healing influence in foot and mouth disease. In any case the above fact is worthy of notice.

It would be desirable if veterinarians and the owners of cattle could make occasional trials, since it is important to substantiate the value of the iodide of potash in this disease.

Oest. Monatschr. f. Thierhkl.

ALOPECIA IN A CALF.

A five-weeks-old calf, normally covered with hair at birth, became hairless and bald during the course of eight days, with the exception of small areas on the back, feet, tail and ears. Even here the hairs could easily be extracted. With this condition the animal was very lively, did not freeze, and had a good appetite.

It was covered with blankets, and a salve consisting of 150 g. of lard, 40 g. of tincture of cantharides, 5 g. of creolin rubbed in, with which the body was treated in ten different parts. In fourteen days a greyish red down showed itself

similar to that on a young duck. In from six to eight weeks the calf was practically normally covered with hair again, and assumed its original light brown color.—*Berl. Thierarzt. Woch.*

DIABETES MELLITUS.

A five-year old Danish hound, comparatively well nourished, had in different areas weeping eruptions. The patient, in spite of a good appetite, was very languid and emaciated. Examination of the urine revealed 2 per cent. of glucose. In spite of careful dietetic regimen, the dog died. The muscles were flabby and atrophied; the kidneys were enlarged and hyperæmic; otherwise, no pathological changes.—*Ibid.*

PURULENT INFLAMMATION OF THE URACHUS.

A two-months-old calf showed in the neighborhood of the navel a swelling 15 cm. long and 10 cm. wide. Same was hard, fluctuating, and slightly painful. Urination was normal.

The swelling was opened widely and half a litre of foul-smelling pus emptied itself. The abscess walls were hard and thickened. In the depth of the abscess cavity, the urachus showed itself as an opening at least one inch wide. The canal was enlarged and actively inflamed. By means of a sound the bladder could be entered. In five days cure resulted from irrigation of the canal and bladder with a 2 per cent. potassium permanganate solution.—*Ibid.*

PARENCHYMATOUS NEPHRITIS.

In a batch of six horses, three sickened in the course of eight days with symptoms resembling azoturia. The urine, however, was of a light straw color instead of being red or brown. As afterwards became known, the groom had secretly given the horses brewery grain, rich oats and corn.

All three died. Autopsy revealed severe parenchymatous nephritis dependent on toxic basis.—*Ibid.*

OBSTETRIC REVIEW.

DROPSY OF THE FŒTAL ENVELOPES AND VENTRAL HERNIA
IN A MARE.

BY MR. DUTREY.

The history is this: grey mare, nine years of age, served by a jackass, is in her seventh month of pregnancy for several days, she is subject to colics, regularly after her meals. When in pain, she lays on her back, with her legs close to the abdomen, then remains for an instant on the lateral decubitus and gets up apparently relieved.

When visited by the author, she seems lively, eating well, with the respiration a little accelerated. What is peculiar about her is the enormous size of the abdomen. She looks like a cow suffering with tympanitis of the stomach; and yet the abdomen is hard, painless, and it requires a great deal of force to reduce that size. There is no tympanitis. Diagnosis is made of dropsy of the foetal envelopes, and the owner advised to have abortion brought on. He declined it.

A month later the mare shows indications of delivery, which she does comparatively easily, having thrown out at the moment of the rupture of the envelopes an enormous quantity of liquid and with the envelopes themselves representing a mass four or five times larger than usual.

Delivered, however, the mare seems very sick, very much prostrated, no fever, with intense dyspnœa, as she was suffering with extensive pulmonary emphysema. The respiration is jarring and double. Auscultation fails to demonstrate anything, even when listening towards the base of the right lung and trying to hear the borborygms which would suggest diaphragmatic hernia.

By degrees, however, the sub-abdominal œdema subsided and then a large ventral hernia is easily observable, which is of such a nature that no treatment can be applied.—*Rev. Vet.*

FŒTAL DYSTOKIA. (*Derodymian Monster.*)

BY MR. E. LAVIGNAC.

An eight-years old cow, in labor, is laying on the right side, making violent expulsive efforts. The membranes are

ruptured, and the case turned over to the author after having been mutilated by an empiric. By exploration he discovers several extremities, which careful manipulation reveals as being four anteriors and two posteriors. Introducing the hand further he discovers in the left flank two heads well formed and united at the base of the neck, while in the right flank he finds the croup of the foetus with two tails.

Diagnosis: derodymus monster, sterno-abdominal presentation, left cephalo-iliac position.

Prognosis fatal. Cow killed for the butcher.

The foetus weighs 92 pounds, shows two heads attached at the base of the neck. There are two vertebral columns, mingling into one at the lumbar vertebræ. One croup with two tails, two anus, two scrotums, four anterior legs, the interns (one left and one right) are united near the elbow by the skin, as far as the fetlock, when below it the feet are free. The other two anterior and the two posterior are normal. —*Ibid.*

OTHER CASES OF FŒTAL DYSTOKIA.

BY MR. DURRECHOU.

Celosomian Monster.—A cow is hard in labor. Exploration of the womb reveals the four extremities coming together. Embryotomy seeming too difficult to perform, forced extraction is attempted, and after slow but steady violent efforts a monstrous foetus is extracted.

This foetus has no sternum, no thoracic cavity. The ribs are bent crossways and the dorsal vertebræ, united together form a semi-circle. The legs are united together from the feet up, the head, thrown upon the sides of the trunk, is flattened. All the viscera are lodged in a large pouch adhering to the principal mass.

This is the third case occurring in the author's practice, and in all of them he had recourse to the same form of treatment.

Hydrocephalian and Ectromelian Monster.—In this case a cow had been in labor for several hours, and Mr. D. arrived too late to relieve her, but he found a foetus which had been extracted by force.

This foetus is very small in proportion to the size of the mother. The legs are short, like those of a badger, and stuck to the trunk; the feet have five short toes, well marked; the bones of the cranium are missing, the frontal and occipital are merely a simple border; the brain, has the size of a small nut, the head forms a ball which ought to have contained five or six quarts of liquid. The face is horrid, there are three lips, the lower one divided in two. The right labial commissure does not exist, and the mouth communicates widely with the orbital cavity.—*Ibid.*

SOCIETY MEETINGS.

VETERINARY MEDICAL ASSOCIATION OF NEW JERSEY.

There was an unusually large meeting of the Veterinary Medical Association of New Jersey, in Achtel Stetter's, 842 Broad St., Newark, on Thursday, Oct. 10, 1895.

It was called to order shortly after 11 o'clock, by the President, Dr. J. W. Hawk, of Newark, besides whom there were present, Drs. J. Gerth and W. Runge, of Newark; J. C. Dustan, of Morristown; J. M. Everett, of Hackettstown; M. M. Stage, of Dover; R. O. Hasbrouck, of Passaic; Hugh Exton, of Washington; B. F. King, of Little Silver; William H. Lawes, of Red Bank; William Gall, of Mattawan; A. Brown, of Windsor; L. P. Hurley, of Hopewell; E. Britton, of Long Branch; S. Lockwood, of Woodbridge; and J. W. Stickler, M.D., of East Orange.

President Hawk suspended the regular order of business to permit the board of censors to examine two candidates. Both were subsequently elected to membership by a unanimous vote.

President Hawk then made an address in which he referred to the so-called anthrax which has been scaring the people of the State during the last few months, and declared his belief that there was no anthrax in New Jersey, as there had never been an official report on the matter from a veterinarian.

The Secretary reported Dr. A. D. Edwards, of Atlantic Highlands, as an applicant for membership. Dr. Dustan

read a paper on the organization and growth of the Association. Dr. Runge reported on the result of a trip to Cumberland County in search of anthrax, and had specimens and a microscope on hand for the benefit of the members.

After Dr. Gerth had read an interesting paper on meat inspection, the meeting adjourned at two o'clock in the afternoon for dinner.

It was reconvened at 3:40 o'clock, and Dr. Gerth's paper was discussed at length by Drs. Runge, Dustan, Everett Hawk and King.

On motion of Dr. Hawk, a committee of three was appointed to investigate the manner in which the money was spent which was appropriated by the State for the stamping out of tuberculosis in New Jersey by a commission of the State Agricultural Board.

Drs. L. P. Hurley, W. B. E. Miller and William Gall were named as the essayists for the next meeting. The meeting adjourned to come together in April.

S. LOCKWOOD, Secretary.

MONTREAL VETERINARY MEDICAL ASSOCIATION.

A meeting of the Montreal Veterinary Medical Association was held on Oct. 24th, 1895, in the Library of the Faculty of Comparative Medicine. There was a large attendance of members and visitors, among the latter being Dr. Miller, of Burlington, Vt. The minutes of the last meeting were read and approved.

The president introduced Dr. Miller, a graduate of '87, who presented a paper on the "Control of anthrax by attenuated germ products." He detailed the results of his experiments with anthrax vaccine upon a herd of cattle in the vicinity of Burlington. The infected area had not been free from the disease for twenty years. When called professionally to the herd in question ten animals had already died, and before the vaccine could be procured, four others had succumbed.

To produce immunity two inoculations are required, the

first being preparatory for the second, which is injected ten or twelve days after. The primary inoculation of the herd took place on Sept. 6th, the second upon Sept. 18th, with the result that only one animal died upon the fifth day following the first inoculation, since which time the herd had remained perfectly healthy in the face of the greatest possible danger of infection from the surroundings, which could not be altered. The only noticeable effect of the remedy upon the animals is a distinct rise of temperature, which invariably manifests itself within a few hours, reaching in some cases to 106 deg. F. and subsiding again in the majority of cases in three days, but in some cases extending to the seventh day.

The death of the one animal could not be attributed to any untoward effect of the agent, but only substantiates the claim for the antitoxin, namely, that the first injection is intended only to prepare the system to withstand the shock of the second. He described the routine of the process by which a sufficient degree of attenuation is reached. The amount of antitoxin used in each case was .25 c.c. The preparatory inoculation was made behind the right elbow; the second, or truly immunizing one, in the corresponding locality on the opposite side. During the treatment the animal is not necessarily subjected to any change, either in diet or surroundings; the only indication of its activity being the thermometric readings. He also pointed out the necessity of using a microscope in distinguishing between anthrax proper and symptomatic anthrax, or "black leg." Furthermore, he pointed out that as anthrax proper and symptomatic anthrax are two distinct diseases depending upon germs of truly different biological and morphological attributes, the use of anthrax antitoxin would be obviously an error in symptomatic anthrax.

Mr. James E. Craik read a carefully prepared paper on parturient apoplexy in a cow, giving the results of his experience with the disease. Most of the members were of the opinion that the nervous symptoms were the result of one or more toxins in the blood. Several members described their method of treatment the success of which, in most cases, be-

ing dependent upon the length of time elapsing between parturition and the onset of the disease, the longer delayed the more amenable to treatment. Dr. Miller stated that he had used hypodermically liquor strychniæ hydrochloratis in two drachm doses every hour, until convalescence. This in cases under observation was very successful, but had not been used sufficiently to induce him to speak positively as to its efficacy.

Mr. S. McNider reported a very interesting case of peritonitis in the horse, describing the symptoms, rapid course, and fatal termination of the disease. A brief discussion followed, after which the essayists for the next meeting were appointed, and the meeting adjourned.

HARRI H. DELL.
Sec'y-Treas.

MASSACHUSETTS VETERINARY ASSOCIATION.

The regular monthly meeting of the Massachusetts Veterinary Association was held at 19 Boylston Place, September 25, 1895, at 8 P.M., the president, Dr. J. M. Parker, in the chair.

A large number of the members were present.

Minutes of the last meeting read and accepted.

Dr. F. H. Osgood, as one of the delegates to the United States Veterinary Medical Association, reported the proceedings of the annual meeting at Des Moines.

The advisability of employing a stenographer was discussed, and the matter finally left in the hands of a committee consisting of Drs. L. H. Howard and H. P. Rogers.

On motion of Dr. Osgood, Drs. Beckett, Blackwood and Winchester were appointed a committee to draw up resolutions on the death of Dr. Williamson Bryden.

A large number of interesting cases were reported, the discussion of which lasted until a late hour, and making it one of the most interesting meetings we have had for some time—the everlasting subject of tuberculosis not being mentioned.

The regular monthly meeting of the Massachusetts Veterinary Association was held at 19 Boylston Place, Wednesday evening, October 23, 1895; Dr. Parker in the chair. There was a good attendance.

Minutes of last meeting read and accepted.

Dr. Howard reported for the Executive Committee that the Secretary be instructed to send notices that the By-laws will be enforced where members do not pay their dues before January 1, 1896.

Dr. Howard reported for Special Committee on stenographer, after which a motion was made and carried that Dr. Howard be given full power to employ a stenographer for our next meeting.

Dr. Beckett reported for the Special Committee on resolutions on the death of Dr. Bryden as follows:

Whereas, It has pleased the Almighty in His divine providence to remove from our midst our esteemed colleague, Williamson Bryden; and

Whereas, The intimate relation and business intercourse with him have been most pleasant, it makes it befitting that we publicly record our appreciation of him; therefore be it

Resolved: That in the loss of Dr. Williamson Bryden we lose a friend and valued member of our Association and profession; therefore be it

Resolved: That the deep sympathy of this Association be extended to his relatives and friends; and be it further

Resolved: That a copy of these resolutions be forwarded to his relatives, spread upon our records, and published in the veterinary journals.

E. C. BECKETT, THOMAS BLACKWOOD, J. F. WINCHESTER.	}	Committee.
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A number of interesting cases were reported and discussed.

Dr. A. Shannon, of Malden, applied for membership.

Drs. Beckett, Parker, Lebow and Lewis promised papers for future meetings.

HOWARD P. ROGERS, Secretary.

VETERINARY BOARD OF EXAMINERS IN PENNSYLVANIA.

The first regular meeting of the Pennsylvania State Board of Veterinary Medical Examiners for examination of applicants for license will convene on the third Monday of December, at the office of the Secretary, W. Horace Hoskins, 3452 Ludlow St., Phila. Pa.

BIBLIOGRAPHY.

LES MALADIES MICROBIENNES DES ANIMAUX.—(Microbian Diseases of Animals,) by Ed. Nocard & E. Leclainche. (G. Masson, Publisher, 120 Boulevard St. Germain, Paris.)

The names of these authors are already so well known and their individual writings so well spread in the veterinary world, that the news only of a new publication from either one of them would be sufficient to insure it a welcome reception by all veterinarians; but when a recent work is presented to the scientific world in which their combined efforts and their mutual researches and talent are united it becomes unnecessary to say a word as to its value, and such is what can be said of *Microbian Diseases of Animals*.

This new book, which comes to add another jewel to the already rich treasury of French veterinary literature, contains over 800 pages, in which many of the affections of microbial nature of animals are considered. Dedicated to the memory of that enthusiastic apostle of Pasteurian doctrines, H. Bouley, it is not strictly a work on pathology, as many diseases of microbial nature are not spoken of, such as *pneumonia*, *typhoid fever*, *gangrenous septicemia*, *tetanus*, etc., but in it are treated those affections whose microbe has remained to this day misunderstood or insufficiently well known. And it is with this object in view that the etiology, semiology, pathological anatomy, experimental study and prophylaxy of the *hemorrhagic septicemia*, *rouget of swine*, *anthrax fever*, *symptomatic anthrax*, *pleuro-pneumonia*, *rinderpest*, *gangrenous coryza of bovines*, *aphthous fever*, *horse-pox and cow-pox*, *distemper*

of dogs, of horse, tuberculosis, actinomycosis, ibotryomycosis, bovine farcy, epizootic lymphangitis, glanders, dourine, rabies, bacillar pyelo nephritis of bovines and mammitis, are presented to the reader in twenty-two chapters well written and of easy and pleasant reading.

That "Microbian Diseases of Animals" will meet at the hands of the veterinary profession a most hearty welcome is a prophecy easy to make, and one which in our estimation cannot be but realized as an appreciation of the great services these two celebrated veterinarians have rendered to scientific veterinary medicine.

MOLLER'S OPERATIVE VETERINARY SURGERY.—Translated and edited from the second enlarged and improved edition by J. A. W. Dollar, M.R.C.V.S., (W. R. Jenkins, 851-853 6th Avenue, N. Y.)

The issue of this valuable work, announced some time ago by the English press, will prove a great advantage to veterinarians and to veterinary students who have waited for its appearance, at last realized through the exertions of the well known house of W. R. Jenkins, who presents the book in a neatly bound form with a very easily read print.

The work is the translation of one of the best authors in Germany, and is done by one whose name has already become well known to the veterinary public. It is divided into twelve chapters, which cover the diseases of the head, those of the neck, of the thorax, of the abdomen, of the stomach and bowels, of the rectum and anus, of the urinary organs, of the organs of generation of the male and female, of the spinal columns, of the fore and of the hind limbs.

Every chapter is subdivided into sections, and the entire work covers over 700 pages, and contains 142 illustrations well designed.

It seems to us, however, that it can scarcely be considered as a special work on Operative Surgery, but, more strictly speaking, one on General Surgery, as it certainly treats more minutely on the subject of surgical diseases than on the description and illustration of the manipulations of operations for the treatment of said diseases; and it is probably, at least

in our estimation, on that account that Moller's Surgery will prove of such advantage to American veterinarians and students; it will fill with them an important space which, up to this day, has been comparatively empty, as by leaving Williams and some few others of smaller dimensions, the subject of surgery proper had no representative in English literature.

We congratulate the translator on his work, and feel satisfied that he will receive at the hands of Americans a hearty welcome.

BOOKS AND PAMPHLETS RECEIVED.

Tratté de Therapeutique Chirurgicale des Animaux Domestiques. By M. M. Cadiot and Almy.

Experiment Station of Ames, Iowa. W. B. Niles, D.V.S.

Investigations Concerning Infectious Diseases among Poultry. By Mr. Smith, Ph.B., M.D., and Veranus A. Moore, B.S., M.D.

PRACTICAL THERAPEUTICS.

POWDER AGAINST THE DIARRHŒA OF CALVES.—Prof. Buti, in the *Clinica Veterinaria*, recommends the following: Salol, 8 grams, oxide of bismuth, 15 grams, carbonate of lime, 30 grams. Mix, and divide into six powders. Give two powders in two hours, the four others at four hours apart. Recovery follows after two or three days of treatment. Complete the operation by washing the udders of the mothers and watch the cleanliness of the stable.

MIDRIATIC SOLUTION FOR EFFECTS OF SHORT DURATION.—M. Groenow, objecting to the fact that the effects of atropine on the pupil may at times last unnecessarily too long in some cases, recommends the following solution, which produces its effect maxima after half an hour to disappear in about an hour: Chlorhydrate of ephedrine, 1 gram, chlorhydrate of homatropine, 1 centigram, distilled water, 10 grams. Introduce three or four drops into the conjunctival cul-de-sac with a hair brush or a glass dropper.

TREATMENT OF GASTRO-BRONCHITIS OF DOGS BY INTESTINAL ANTISEPSY, AND HYPODERMIC INJECTIONS OF EUCALYPTOL.—In the *Veterinary Review of Roumania*, we find the treatment of infectious gastro-bronchitis of dogs, which is distemper with digestive and respiratory manifestations, recommended by Mr. Firtuna, as follows: Hypodermic injections of a mixture of essence of eucalyptus, 20 grams, olive oil, sterilized with heat, 80 grams. Inject one cub. centim. to small, and two cub. centim. to medium-sized animals. One injection daily is ordinarily sufficient, but in severe cases two or even three may be required.

To these, intestinal antiseptics are added: Naphtol B, 10 grams, salicylate of bismuth, 5 grams, powdered sugar, 20 grams. Make fifty powders and give from three to six a day.

OINTMENT AGAINST FAVUS (Pirogoff).—Subl. Sulphur, 15 parts; carbonate of potash, 4 parts; liquid tar and tincture of iodine, of each, 50 parts; lard, 100 parts. Clip the hair short, apply a little of the ointment to soften the scabs. Remove afterwards the scabs daily, wash well and apply the ointment. The treatment lasts two or three weeks.

ANSWERS TO CORRESPONDENTS.

To Practice.—We have several inquiries—what shall we do with them—will you call for or shall we mail them?

Review numbers wanted.—Dr. A. W. Bitting, of Perdue University, Lafayette, Indiana, offers a good premium for the following: Vols. I, II, III; Vol. IV, Nos. 2, 3, 4 and 9; Vol. V, No. 12; Vol. XI, No. 12; Vols. XIII, XIV, XV.

Dr. S. Stewart, of Kansas City, Kansas, is wanting Vol. XVII; April, June, July, 1893, and January, 1895.

PERSONAL.

Dr. T. K. Deckard, of Middletown, Pa., one of the graduates of the A. V. C., class 1892, holds now the position of Postmaster in that city.

Dr. H. M. Ball, a graduate of the A. V. C., class 1888, has been elected lecturer, demonstrator of anatomy at the Ohio State University—Veterinary Department.

NEWS AND ITEMS.

Antirabic Sero-Therapy.—According to the *Lancet*, Drs. Tizzoni and Centanni have published a series of articles on the subject of the use of the serum of animals, protected by the original method. The value of this preparation has so far been tested only upon animals, but if it should prove to be what is claimed, it will do away with the expense of Pasteur Institutes, as the serum can be dried or made antiseptic and kept so that any one can use it.

Heredity of Tuberculosis.—The State Veterinary Department of Iowa has carried on an extensive series of experiments to determine whether tuberculosis in cattle is hereditary. These were made at the State Agricultural College and have extended over a long time. The conclusion was that the disease is not contagious.

Deodorizing Iodoform.—The odor of this preparation, if not dangerous, is disagreeable and annoying, but can be removed by oil of turpentine when it comes in contact with it; hands washed first with water containing a little turpentine and then washed again with soap and water will be found free from the smell of iodoform.

A Doctor Stable Club.—An organization has been formed in New York by a number of physicians, for the care of their horses and carriages. The services of all trades related to carriage driving will be engaged for a fixed monthly sum, and all repairs of carriage maker, harness maker and horse-shoer will be paid by the association. The cost of the whole service to each member will be about thirty dollars a month.

Anti Tubercle Serum.—The American Agriculturist says: Dr. Paquin's anti-tubercle serum is proving successful in apparently eradicating consumption from the human system. We suggest that it be applied to tuberculous cattle. If the disease may be located with one squirt of tuberculin, and with another squirt of anti-tubercle serum may be cured, the cow-killers' job will be gone!

AMERICAN VETERINARY REVIEW.

JANUARY, 1896.

EDITORIAL.

THE REVIEW FOR 1896.—The REVIEW extends the compliments of the season to its readers throughout the country, and wishes them prosperity for the New Year just entering upon. She intends to use her utmost resources to be even more worthy of their patronage and affection than she has ever been in her long history. Never since its inception was the REVIEW enjoying more of the confidence of the veterinary public than she is to-day. Our advertising pages are being used to their full capacity by those who wish to reach the large constituency of veterinarians who constitute her readers. The publisher takes pride in these evidences of prosperity in view of recent events, and to make THE REVIEW worthy of her success has made extensive arrangements to enlarge her usefulness. During the year just opening, every department will be enlivened by contributions from the more reliable sources. Original articles upon veterinary science in its different fields and from the pens of active workers will be abundantly supplied. Articles of a practical nature—so helpful to the busy physician in his combat with every-day disease—will be from first hands, while the journals of other lands will be carefully searched for items of value and interest to our readers. Veterinary society proceedings, and especially the papers of value that are presented, will find a welcome place in our pages. News items of importance to the profession at large will be condensed and printed, but we have no room for “chit-chat” of no earthly benefit nor interest except

to a small circle. We wish our readers to feel that we are working for their interests alone, that every success of the REVIEW will be their own, as it is not intended as a money-making enterprise, and that every increase in her financial standing will mean an extension of her usefulness.

TETANUS ANTI-TOXINE.—There is probably no subject and no new application of the serum therapy which at present is more interesting to the veterinarian than the effects and the advantages that can be obtained by the injections of anti-toxine against that dreadful disease tetanus for the treatment of which the entire veterinary pharmacopia has yet been unable to produce a comparatively sure treatment.

Is anti-toxine advantageous only as a preventive, or is it to be recommended as a means of treatment, as a curative agent?

If we are to believe entirely and only what has been written by European authors, and among them Prof. E. Nocard, anti-toxine is only advantageous as a preventive. The learned professor of the Alfort school is delivering to the French veterinarians enormous quantities of serum which is used as a prophylactic agent. This is very good—but can it be expected that, as such only, veterinarians can use it—and is it probable that everyone who performs an operation will be induced or allowed to apply this treatment in all cases where tetanus is likely to follow—even if he were going to use it only against castration, or traumatism of the foot and a few other diseases, which are the conditions where the disease is probably more likely to appear.

We have been for a long time inclined to be of that opinion, but the reports that have recently come to our ears have made us doubt the correctness of our judgment.

We know well enough that the anti-toxine has already been tried by several American veterinarians, but unfortunately they have failed to record the results of their experiments—undoubtedly a very gross carelessness.

Dr. Gibier, of the New York Pasteur Institute, has reported to us verbally the history of several cases which he has been able to observe while preparing horses to furnish him

with anti-toxic serum. These animals presented such developed tetanic symptoms that we felt justified to look upon them as fatal cases. Dr. Gibier tells us that they recovered by the treatment of anti-toxine.

Recently he also related to us the case of one of his horses, the finest of his large stable, already immunized against diphtheria, to which, by some unexplainable error, 25 cc. of strong tetanic virus was injected—a quantity whose enormous proportion can be calculated when one thinks that only two drops of the same virus would be sufficient to give an animal a fatal attack of the disease.

Within half an hour, however, he was successful enough to inject to this horse a very large proportion of anti-toxine, partly in and round the wound where the virus had been injected, partly directly in the veins.

The horse escaped all further developments of the trouble.

With all these facts in view, and the value of the cases reported by Dr. Gibier of the recovery of several of his tetanic patients by the use of anti-toxine, and also in the presence of the records of cases of recovery which have been observed by human practitioners, is there not an obligation on the part of the veterinarians to have recourse to the same treatment and to use anti-toxine not only as a prophylactic but also as a curative agent.

We think there is—and we would take this opportunity to ask those of our colleagues who would try this treatment to remember their obligations to the profession and to their confreres by publishing the results of their experiments.

The REVIEW is always open to them.

JURY DUTY IN NEW YORK STATE.—New York State veterinarians seem to be doomed to temporary disappointment in whatever steps they take toward obtaining legislation in their behalf.

We all remember, some years ago, when the bill for registration had, after years of attempts followed by as many years of failures, passed both houses at Albany, a great joy existed among veterinarians, and many words of congratulation were exchanged.

But, when the bill had received the signature of the Governor and became a law, the joy was changed to disappointment. A little clause, unknown to those who had pushed the bill, had been introduced, where and how, no one knew; but what was known was that the essential effect of the bill was almost entirely destroyed.

A somewhat similar circumstance in its nature occurred this year—though not one of history repeating itself. There was no change in the bill, no introduction of a clause. The clause existed—and was unfortunately overlooked.

Dr. O'Shea was given charge of a bill for the last legislature to the effect of exempting veterinarians from jury duty. Without saying anything of the reasons advanced in favor of the bill and of the value of those reasons in some special circumstances, let us repeat what we have already said: Dr. O'Shea worked most faithfully for the bill, regardless of loss of time and of expenses; he at last succeeded, and whatever the bill grants, or what we all supposed it granted, was due to him, and he deserves well of the profession.

The law reads as follows, as taken from the statutes:

CHAP. 332, LAWS OF 1895.

AN ACT TO AMEND SECTION TEN HUNDRED AND THIRTY OF THE CODE OF CIVIL PROCEDURE.

The People of the State of New York represented in Senate and Assembly, do enact as follows:

SECTION 1.—Subdivision four of section ten hundred and thirty* of the Code of Civil Procedure is hereby amended so as to read as follows:

4. A practicing physician or surgeon having patients requiring his daily professional attention, a licensed pharmacist actually engaged in his profession as a means of livelihood, and a duly registered veterinary surgeon actually engaged in his profession as a means of livelihood.

§ 2. This act shall take effect September first, eighteen hundred and ninety-five.

But alas! as we have said, there was a clause—and that was found in a section of a preceding law, referring to the same question exemption of jury duty, and which stated that: *The remainder of this article does not apply to the City and County of New York, or to the County of Kings.* And this is why vet-

* This section reads: *Persons entitled to exemption from service.* Each of the following persons, although qualified, is entitled to exemption from service as a trial juror, upon his claiming exemption therefrom: 1, 2, 3, 4 (the amended section.)

erinarians of the Counties of New York and Kings are liable to be called to serve as jurors.

This is an unfortunate state of affairs, which will oblige us to ask of Dr. O'Shea another effort, which we are sure he will gladly make, so as to place all of us equal before the law.

ORIGINAL ARTICLES.

REPORT OF PRIZE COMMITTEE.

DR. TAIT BUTLER, Chairman.

To the President and Members of the U. S. Vet. Med. Association :

GENTLEMEN:—As the chairman of your Committee on Prizes, I beg leave to submit the following report: This report is entirely my own, as the only other member of the committee, through a misunderstanding of my own, has not been consulted in regard to it.

In order to make clear the recommendations of the report, I beg leave, with your permission, to read an extract from the published report of the proceedings of this association for 1893, and to give a brief history of the "Prizes" offered by the association.

Now, as you have heard, this prize has been held out to the young men of the association for more than ten years. It has been during most of that time worth from \$100 to \$150 in plate or cash, at the option of the winner. This in my judgment is a sufficiently large prize to stimulate the efforts of the younger members of the profession to a marked extent, and would, I believe, have done so, had it not been for a few unfortunate occurrences during the early history of the prize. In 1886 your humble servant was one of two who competed for the prize. This, I believe, was the first contest. Right here began the trouble which, in my judgment, finally resulted in the prize falling into disrepute. When the result of this contest was announced one of our veterinary journals assured us that there was considerable disappointment to a large number present in the fact that the winner was neither a graduate

of a United States college, nor a member of the association.

The next year, or possibly two years afterward, more serious trouble arose and the rightful winner of the prize was put to considerable annoyance before he obtained part of the prize, while another part he never received.

This was practically the last heard of the prize until the late Chicago meeting, concerning which you are already informed. Last year a paper was submitted to the chairman of the committee in competition for the prize, but he was not present at our meeting in Philadelphia and made no report.

Upon accepting the chairmanship of the committee for this year I was informed that this paper would be turned over to me for consideration. Not only have I failed in an effort to induce last year's chairman to turn over that paper, but our energetic president has had his greater efforts utterly fail also.

Now, gentlemen, I submit that when as prominent a member of this association as Dr. Huidekoper will so utterly disregard the obligations of the duties of the chairmanship of this committee on prizes, together with the other unfortunate complications which have arisen, is it any wonder that the younger members of the profession have not enthused over it.

I do not believe that an interest in the prize can now be obtained. In fact, the prize has fallen into such a degree of disrepute that it probably can not be put on a satisfactory basis. Therefore, I, as chairman of the committee for this year, recommend that owing to these conditions and the depleted condition of our finances, the prize and committee be discontinued for the present, at least. We do this with regret, as having once won it and received one hundred dollars in cash just when we needed it most, we feel that it might have been of value to some other young member of the profession. This prize enabled me to become a member of the association early in my professional life, and it also enabled me to purchase several much needed books that could not have been obtained for a few years, but for its help. But, notwithstanding all this, we recommend its discontinuance for a few years at least.

We likewise recommend that action on the resolution offered in Chicago, by Dr. L. McLean, be indefinitely postponed.

MY FIRST CÆSARIAN SECTION IN THE COW.

By A. BABB, A.B., M.D.C., Springfield, Mo.

A Paper read before the Illinois State Veterinary Medical Association.

The operation of gastro-hysterotomy is fraught with so much gravity that it is justly employed only as a *dernier resort*, and consequently the cases in a general practice where it is clearly indicated are comparatively rare. The general lack of aseptic surroundings in the barns and stables of our domestic animals complicate the after treatment, and their small pecuniary values decrease the number of visits of the surgeon. Both these factors still further reduce the chances of recovery to a minimum.

About six o'clock on the sixth of last April a gentleman hastened into my office and told me that a fine, red cow, belonging to Mr. T., at the corner of Twelfth and Laurel sts., had been in labor since morning.

My aid having been requested, it took but a few minutes to place the usual obstetrical outfit in the buggy and repair to the scene of action. A glance told me that my bovine sufferer was well nigh exhausted, and a moment more, that her throes were very forcible and very frequent. Her owner informed me that this was her seventh calf, that she had had vigorous expulsive efforts since morning, and that he was at a loss to see why the trouble should occur. After hastily doffing my suit and donning apparel appropriate to such cases, an examination was made at once. Barring a partial prolapse of the vagina, everything normal till the os uteri was reached: it was so indurated as to exclude the introduction of as much as the smallest finger, in fact complete atresia seemed to be present.

The owner was apprised of the situation, informed that the calf could be saved by the Cæsarian operation, but a decidedly unfavorable prognosis given for the cow. He was

urged that if he did not have her treated in this way to dispatch her at once in order to end her misery. He decided to have me try to save both cow and calf. Considering that I had everything to gain and nothing to lose, and being affected with an itching for the knife in such a novel case—a veritable tomomania—I readily consented. As he prized the cow highly, we soon agreed on a fee.

I informed him that at such serious undertakings it was customary to have another member of my profession present to assist, but he objected on account of the extra expense and stating that he would do anything requested of him to aid me. I told him to wash his hands very clean in warm carbolized water, while I did likewise and proceeded to prepare the necessary sutures, needles, scalpels, artery forceps, etc.

The patient was secured much quicker than the method can be related, for she was lying on her left side in a small shed or stall, too weak to rise or to make any formidable resistance. In short, all the appliance used was but a common bull-leader introduced into her nostrils, and held by one of his neighbors in such a way as to throw her nose into a perpendicular direction with the weight of her head resting on her horns.

Two ounces of the tincture of opium, more as a stimulant than as an anodyne, was exhibited. The hair was clipped over the appropriate parts and the space washed with a solution of that comparatively unpopular, but extremely useful antiseptic—carbolic acid.

The laparotomy was performed in this manner: commencing about four inches before the anterior angle of the ilium, a free incision was made about fourteen inches downward, angling a little forward; the first stroke of the knife “laid off the land,” as a farmer boy accustomed to plowing would doubtless express it, for it severed the dermal covering and part of the subcutaneous tissues; the next two came down to the peritoneum, but here a pause was made to apply artery forceps to a couple of small vessels and to sponge off the parts. The hemorrhage was not extensive and soon subsided; the peritoneum was then divided, and the gravid

uterus brought from beneath the intestinal mass, which was held back in the abdominal cavity by my untrained assistant. A twelve inch incision into it enabled me readily to extricate a nice, large, red heifer calf, which showed its appreciation of liberty by repeated kicks and efforts to stand up.

The secundines were then removed, but not before the placenta was severed from each maternal cotyledon by careful manipulations. The wound in the uterus was diligently cleansed and stitched up with fine surgeon's silk—my spools of carbolized catgut being at the hospital and time was too urgent to wait till they could be brought. The womb was then replaced beneath the other viscera, a few blood clots removed from the abdominal cavity and the latter sponged out. Inserting strong sutures into the edges of the great, gaping, outside wound and dressing it completed the operation; most of the work having been done by the light of one dim, flickering lantern.

Many times have I wondered why our cousins, the M.Ds, do not have even a greater per cent. of their patients in major surgery recover, for most of the cutting is done in a strictly aseptic room, on a subject carefully prepared by diet, and rendered immobile by complete anæsthesia and one which would readily heal by first intention. The minute after-attention by trained nurses is also in strong contrast to the gross neglect to which our dumb friends are often subjected.

The next thing in order, to resume my former topic—the cow in question—was the introduction of two sutures through the labia vulval. This having been done, and another dose of laudanum having been administered, I left her for the night.

At my call the next morning she was up, was much brighter in appearance, and had drank about sixteen quarts of gruel made of warm water, shipstuff and oil-meal. Her temperature was 100 degrees and pulse 90 per minute. The further treatment consisted in the use of stimulants, tonics and antiphlogistic agents with solutions of carbolic acid three per-cent, or of mercury perchloride, one part to 1,000, as a detergent to the local injury. At no time did the fever exceed three and a half degrees, though for a few days partial ano-

rexia and adipsia were manifest. The peritoneal edge of the wound healed without suppuration and the rest of it by granulation.

She gave enough milk all the time to nourish the calf, and finally furnished an abundance of it for other uses. I saw both on the 17th inst.

The calf is fat and saucy. The cow is still giving a good flow of milk and one has to hunt carefully in her flank to discover any trace of her former trouble.

Of course the owner is abundantly satisfied. The work brought me a little money and perhaps a greater value in reputation—*reputation*, which the physician, as well as the immortal Shakespeare well knows, is "oft got without merit and lost without deserving."

REPORT OF THE COMMITTEE ON DISEASE.

BY M. R. TRUMBOWER, Chairman.

Read before the United States Veterinary Medical Association.

(*Continued from page 557*).

While making this investigation, a number of individuals spoke about having been troubled with chinch bugs more or less for the past two or three years, but more extensively last year than at any previous time; that they seemed to leave the wheat-fields and oats and get into the corn, and in many fields practically ruined acres and acres of corn. I was in many stables, and invariably examined the fodder and the straw, and in all instances where the disease had appeared in a severe form, the leaves near the stalk were filled with dead chinch bugs and their moultings. We could not pick off one leaf in a hundred which did not contain some dead bugs. Now the question arising in my mind is this, is it possible for chinch bugs, when they exist in the fodder to such an extent, to cause an irritation of the membranes, such as was manifested in this outbreak? In many inquiries which I have made I failed to discover any reports that observations have been made where disease was attributed to fodder or

straw that was infested with these insects. The next question which arises in my mind with regard to chinch-bug infection is this: Could chinch bugs that are affected with the fungus disease, known as the white muscardine (*sporotrichum globuliferum*), cause such symptoms as I have just described? In order to discover something with regard to this question, I addressed a letter to Prof. S. A. Forbes, the entomologist at the University of Illinois, who had been making experiments with this chinch bug disease, and during the past year has distributed infected bugs in the various counties of this State where this pest existed. I also addressed a letter to Prof. F. A. Snow, of the University of Kansas, and one to Prof. Paul Schweitzer, of the Missouri State University. I received replies from Profs. Forbes and Snow. I desired to know how rapidly this fungus disease of bugs could spread in a certain neighborhood when infected bugs were placed into the fields for the purpose of exterminating chinch bugs.

I beg leave to quote the following extracts from the bulletin by Prof. Forbes, dated June 7th, 1894:

THE CHINCH BUG IN ILLINOIS.

In Bulletin No. 19 of the Agricultural Experiment Station of the University of Illinois, published in February, 1892, notice was given of an extensive outbreak in southern Illinois, with warning of its probable development in the following year. According to our advices at that time, eight counties in the southern and south-central part of the State were injuriously infested, and eighteen other counties were mentioned, in which the chinch bug was reported as a general occurrence in unusual numbers.

“This attack increased in intensity during 1893, and this spring the chinch bugs emerged from their winter quarters in numbers sufficient to do great mischief in no less than twenty-four counties throughout the regions above mentioned. The area seriously infected is practically the same as that to which attention was called in 1892. The counties now involved being Williamson, Jefferson, Perry, Washington, Clinton, Madison, Bond, Marion, Fayette, Clay, Rich-

land, Jasper, Effingham, Cumberland, Montgomery, Macoupin, Scott, Morgan, Sangamon, Christian, Pike, Brown, Cass and Henderson."

Extract from Bulletin No. 5, Nov. 26, 1894:

"The white muscardine will not spread among vigorous chinch bugs in the field in very dry weather to an extent to give the disease any practical value as a means of promptly arresting any serious chinch bug injury under such conditions. It may be added that chinch bugs are usually vigorous in dry weather.

"It is most likely to 'catch' in low spots where the soil is kept somewhat moist by dense vegetation, a mat of fallen herbage, or the like. Shocks of corn, especially when the crop is cut early, furnish excellent places for the development of this disease.

"If decidedly wet weather follows upon its introduction, even after an interval of several weeks, it is likely to start up and take visible effect; but continuous rains, depressing the vital energies of the insect, are commonly requisite to its efficient action.

"It is always so generally prevalent, in a more or less latent state, among the chinch bugs of Illinois, both north and south, that it is very likely to appear and spread, as if spontaneously, whenever conditions favorable to its development long prevail, whether it has been purposely introduced or not.

"The time elapsing between the establishment of such favorable conditions and the full development of the disease among the chinch bugs of any locality, may possibly be shortened if the infection has previously been introduced by artificial means.

"Whatever weakens the insect favors its spread, as a rule. It is, consequently, much more likely to attack adults than young, especially spent males, and females which have laid their eggs, and which are soon to die of old age; but it nevertheless often kills them at all ages. In agreement with the above we have noticed that the fall generation of adults is less subject to it, other things being equal, than the generation which matures in midsummer. As this fall brood is to

live over winter before laying its eggs, it contains no worn-out adults."

Extract from Special Bulletin, May 7, 1895:

"The white fungus causing insect disease takes effect on the weakened insect more readily than on one in full vigor, on the full grown chinch bug than on the young; and hence, most easily of all, on spent adults which have already laid their eggs and are about to perish by the natural termination of their life period.

"The white muscardine is a native disease of the chinch bug, and a large number of other insects as well. It never dies out entirely, but is likely to appear spontaneously over a large extent of country when conditions favorable to its development are long maintained.

"Two generations of the chinch bug appear every year, and when each of these generations matures the adult bugs commonly take wing and scatter, thus disappearing from fields, or parts of fields, heavily infested by them. Such dispersal has often been mistaken for a destruction of chinch bugs by disease. One generation matures shortly after wheat harvest and the other in late summer and in the fall. The chinch bug sheds its skin four times while growing, and the empty skins left by it are often mistaken for dead bugs; a mistake which has often led to a false conclusion as to the effect of these infection experiments. The cast skins never bear wings as the insect does not moult after its wings are formed. They may further be readily distinguished from the dead bugs by the fact that when pressed between the thumb nails they are readily seen to be empty shells."

The following is an extract from a letter of May 27th, 1895, from Prof. Forbes:

"You will doubtless be interested to know that recent visits through the wheat fields of the worst infested parts of southern and western Illinois show that the chinch bug disease is abundantly present in these fields, multitudes of the old bugs having died with it among wheat roots, where the young, as they hatch, will be exposed to immediate infection. Its rapid propagation among the new generation consequently depends almost wholly on the weather."

Prof. Snow's reply :

"The rapidity of dissemination of the infection in a field depends on the weather and the stages of growth of the bugs. These are very uncertain factors, and for this reason we cannot determine exactly, or strike an average of the rapidity of the dissemination. We would expect marked results in ten days after the infection was placed in a field. The chinch bug is such an uncertain insect, and is so affected by weather that we have been unable to determine definitely in regard to many of its habits. We know that the chinch bug will migrate for long distances in one season apparently, and then again, we have learned that the chinch bug will not move from a given neighborhood for two or three years. We know of no instance where the chinch bug has caused sickness in cattle, nor have we ever heard of rumors to that effect."

Prof. Paul Schweitzer, in an article published in the *Rural World*, makes the following statement :

"You can distribute these infected bugs from your own cages to your neighbors, and they in turn to others, so that in a short time a large area of country may be benefited."

The circumstances which appeared very remarkable to me, and strongly favor the theory that this horse disease is a result of the distribution of diseased chinch bugs is shown by the fact that the counties in which the greatest number of distributions were made are the ones which have suffered the most severely with this horse disease. While these distributions, the list of which I present, was made this year, it shows that in the previous years distributions were made in the same counties, and that these were the counties most affected with the chinch bug pest. Randolph County had twenty-three distributions of infected bugs ; Clinton County, seventeen ; Bond County, sixteen ; Marion County, sixteen ; Macoupin County, twelve. These five counties report the greatest number of fatalities among their horses. A few reports of a similar disease were sent in from Washington County, which had twelve distributions of diseased bugs ; Jefferson County had fourteen distributions ; Effingham County, eleven ; Madison County, eleven ; Shelby County, thirteen ;

Jasper County, seventeen. These facts led me to believe that there is some connection between the chinch bug, or the chinch bug disease, in introducing this peculiar disease among horses and mules, and I desire very much that each member present to-day will bear this account in mind, and endeavor to discover whether similar results may not appear in other sections where chinch bug disease is prevalent. By chinch bug disease I mean the white muscardine fungus.

Hog Cholera.—Hog cholera developed in many counties last fall in this State. In many instances it is attributed to the swine from Nebraska and other drouth-stricken sections. It ran a short course and seemed to abate before the holidays. Within the last two months the disease has broken out in a few of the counties in the State and assumed a very fatal type. We have been in the habit of attempting to find causes for outbreaks by attributing it to the introduction of hogs from other States, either coming from an infected territory or becoming infected in transit, through cars or stockyards. This alone, in my mind, does not account for so many outbreaks at some particular season of the year when we take into consideration its periodical appearance, which ravages nearly every section of the State about once in every six or seven years. I think we must look further for a cause than one that would be introduced by importation alone. It would not be a surprise to me if some scientist would discover one of these days that the hog cholera or swine plague germ was indigenous to our soil, and that under certain favorable climatic conditions becomes virulent and fatal.

In other years it may lie in a latent and dormant condition, or that our native swine do become immunized by the constant presence of a non-virile germ. I have known numbers of instances where the disease developed simultaneously several miles distant from where there was any known possible communication between two herds, or any other source of infection. The hogs introduced from other territory on infected soil might be less resistant to the influence of this germ than hogs which were bred on the place, and consequently contract the disease, and by so doing rap-

idly increase the germ production and intensify the virility of the bacteria, so that even native hogs will contract it and die.

KANSAS.

Dr. R. H. Harrison, of Atchison, writes:

"Your favor of June 10th received. As State Secretary of Kansas for the U. S. V. M. Association I have prepared a report for the meeting to be held at Des Moines, Iowa, on September 10th and 12th, which will embody reports of contagious diseases as well as new methods of treatment."

Dr. S. L. Hunter, of Fort Leavenworth, contributes the following very interesting article:

"Being stationed at a military post, and my opportunities for general observation being limited, my report will of necessity be brief. We have tuberculosis with us, as it is very generally distributed throughout the country, and it is my opinion that ten per cent. of our milch cows are affected to a greater or less degree. Have made a number of tests with 'tuberculin' and a few post mortem examinations, but nothing new brought out. Am happy to state that the contagious pleuro-pneumonia (?) scare has subsided, but not without doing the cattle interests of Kansas a great injury, and will, no doubt, affect the whole country to some extent. Influenza has prevailed to quite an extent, having at one time about forty cases to treat, but no deaths. Glanders and farcy prevail in this locality notwithstanding the efforts of the State to stamp it out. I had in my private practice eight cows with a peculiar disease (to me) that I did not fully understand. They were all taken sick within three days—very obstinate constipation, flatulency, accelerated pulse and fever, discharge of mucus from the nostrils, and constant moaning. The animal persisted in lying down; the muzzle raw and bleeding, the mucous membranes of the eyes raw in places; sores on vulva, udder and teats. One had an abrasion of the skin on right side; this became hard and indurated, and the skin on head and neck became hard and thickened and laid in folds. The milk secretion nearly stopped; the skin on teats and lower half of udder became black, and exfoliated.

One cow discharged blood-red urine. They were about three weeks in recovering. I treated with laxatives internally and antiseptics locally, and took milk with milk tubes. All recovered, but some very slowly, and I was obliged to give three quarts of linseed oil to one before the fæces became normal. I had never met with such a case before, and was at a loss for a name; but on conversing with friends, was informed that the symptoms were those of poisoning by eating 'buckeye.' Owing to the fact that the cows were all in the pasture on the river bottoms, and grass but slightly started, I am inclined to the belief that the cows were so affected."

Dr. R. S. Mayo, of the Kansas State Agricultural College, issued a very interesting article in May, 1895 (*Bulletin*, No. 49), treating of several cases of cattle poisoning by nitrate of potash, contained in corn fodder. It appears that the corn stalks were very highly charged with this salt, and many of the cattle that ate this fodder died with all the symptoms of acute gastro-enteritis.

LOUISIANA.

Dr. W. H. Dalrymple, of Baton Rouge, reports as follows:

"With regard to the prevalence of contagious and infectious diseases in this State, I may mention the fact that, so far as I am aware, the only diseases of that class which trouble us, and that only occasionally, are, anthrax and glanders. The former principally among mules on the sugar sections of the Mississippi bottoms, frequently due, in my opinion, to infection of pastures and forage, or grain, from the improper disposal of charbonous carcasses or excrement from charbonous animals. To illustrate, I attended an outbreak of anthrax on a sugar plantation two or three months ago, and I am firmly of the opinion that the spores were introduced on the place in rice-bran which was being fed. The rice, more than likely, having been on a previously infected place.

"Glanders, in every outbreak that I have attended, I have succeeded in tracing to other animals imported from other States. Unfortunately, as yet, we have had no legislation

prohibiting such importations. As far as my knowledge goes I do not think tuberculosis is prevalent in Louisiana. Our cattle spend the greater portion of their time in the open air. Although there are a number of pure bred herds of different varieties, the great majority are native cattle."

MARYLAND.

William Dougherty, of Baltimore, briefly states:

"There has been but very little sickness here this year, principally sore throat in various forms."

MASSACHUSETTS.

Dr. John M. Parker, of Haverhill, contributes the following report:

"In this part of the State we have had only the usual run of the usual diseases seen in country practice. Catarrhal fever has, possibly, been a little more prevalent than usual, and I think we have had a large proportion of lung complications, where there is a profuse catarrhal discharge. I like to use Whitall, Tatum & Co's vaporizer, instead of the old method of steaming the head. Simple tonics, and attention to hygiene constitute the bulk of my treatment in simple cases. In fact, the bulk of cases get well faster with a minimum amount of medication—at least such has been my experience. The Cattle Commission, and the tuberculosis fiasco in Massachusetts is about played out."

Dr. J. F. Winchester, of Lawrence, writes:

"In regard to new treatment, I am of the opinion that in petrolatum we have almost a specific for diseases of the respiratory tract when such diseases as glanders and tuberculosis are excluded."

"Under the recent enactment of the Legislature of Massachusetts, the State Board of Cattle Commissioners have been actively engaged in the detection and eradication of tuberculous animals; they have met with much opposition and bitter criticism. I cannot refrain from making a brief extract from their report of January 10th, 1895, where they reply to some of their captious critics:

"Another argument adduced against the use of this agent, tuberculin, is, 'Some who are as good authority as any de-

declare the injection of tuberculin to be dangerous, as well as useless.' We have already shown that it is not useless in detecting the disease; that it is dangerous is yet to be shown by actual facts. With the thousands and thousands of doses of tuberculin that have been used in this way in this State, and through this country, and in Europe during the past four years, there is yet to come the first authentic account of any injury that has been done with it to healthy animals when its use has been in competent hands. A statement of this importance should not be given weight unless it is accompanied with facts proving its accuracy. No such facts have ever yet been brought forward by any person; and these statements usually emanate from sources that have given the matter but little attention. An examination of the method by which tuberculin is prepared will show that it is impossible for it to produce the disease, and that it has not done so, the experience of the commission and many others in the field have clearly proved.

"It is further said: 'To kill a good, healthy cow, because it may have a small tubercle the size of a pea somewhere in the system is worse than a blunder.' Can it be said that a cow that is tuberculous, though there may be but one tubercle the size of a pea, is a good, healthy cow, and incapable of disseminating the disease to others? Tuberculosis is a contagious disease, and if an animal has one tubercle in it, who will say that the blood is not already contaminated? Experience has satisfied this commission that there is but one course to pursue, and that is to destroy all of the animals in which tuberculosis is present, regardless of the degree.

"It is further said that 'The worst thing that can be said about the tuberculin test is, that it is no judge *of the degree of the disease*, and that, while its indications are correct in a great variety of cases, it frequently says that the disease exists when it is in such an incipient form that the animals are apparently well and capable, under usual conditions, for many years of useful service.' The use of the tuberculin is merely for the purpose of detecting the existence of the disease; in the opinion of the commission, the degree of the disease is of no im-

portance. An animal where the disease is present is not capable, in the opinion of the Board, of *many* years of *useful* service. To be sure, it may live for years; it may perform its ordinary functions to a profitable extent, if the owner is allowed to sell its products; but it is nevertheless a source of menace to the health of the community. There is, therefore but one course to pursue with such an animal, and that is to destroy it."—*Cattle Commissioners Public Document*, p. 51.

"During the past year 160 animals have been destroyed for being affected with glanders or farcy."

(*To be continued.*)

CONTRIBUTION TO THE STUDY OF SWINE PLAGUE, HOG CHOLERA AND PNEUMOENTERITIS OF SWINE.

By DR. W. SILBERSCHMIDT.

(*Continued from page 567.*)

RESISTANCE OF RABBITS VACCINATED AGAINST ONE OF THE DISEASES TO THE VIRUS OF THE OTHERS.

Let us arrive at the principal object of our work. It was to know how animals vaccinated against one of the diseases would resist to the two others.

The microbe of *swine plague* being the most virulent, we have experimented specially upon rabbits vaccinated against the virus. I will begin by relating my experiments.

No. 145.—30-XI, 1k-950. Vaccinated with 7.5 cc. of sterilized cultures injected in four doses; test against swine plague the 21-III. The witness dies in 20 hours. The 4-IV, 1k-990; injection of 1.20 cc. of *hog cholera* culture killing two witnesses in less than 24 hours; 2d test of *hog cholera*; the 7-V (2k-20). The witness dies in 40 hours; 3d test, the 21-V; 4th test, the 8-VI. A month and a half later, this same rabbit resists a second injection of *swine plague* virus, which kills the witness in 24 hours.

No. 198.—Vaccinated by 3 injections of diluted blood of *swine plague*, sterilized by contact with thymic acid. Resists to five tests of *swine plague* virus. A month after the last injection, the rabbit receives 1.4 cc. of virulent blood of *hog cholera* without presenting morbid symptoms; the witness dies in less than 20 hours.

No. 221.—Vaccinated by 6 injections of diluted blood, sterilized by contact with thymic acid. Resists to two tests of virulent culture of *swine plague*. A month and a half after the last test, injection of 2.10 cc. of *hog cholera* culture, which kills

itness in 40 hours. The rabbit has an oedema at the point of injection, which disappears after four days. 24 hours after the first test, a second is made against *hog cholera*; the witness dies in 16 hours; this rabbit presented a small abscess localized to the point of injection (twelve days later, he is affected with ascending traumatic myelitis; its blood is extracted from the carotid).

No. 183.—Vaccinated with 5.5 cc. of culture filtrated with the Pasteur bougie, injected in three times; two tests against *swine plague* without witness. Nine days after the second test, injection of 1.20 cc. of culture of French pneumoenteritis (witness dead in 22 days), the rabbit is losing considerable weight; for about a month he remains below his initial weight and presents a tumefaction (abscess), which occupies first the whole ear, then becomes localized to the point of injection; there is besides on the back all along the vertebral column a second fluctuating tumor which seems to be a large, limited purulent collection; notwithstanding the progressive increase of the size of this second tumor, the rabbit which did weigh 1k.900 at the first test weighs two months later 2k.430 and resists to an intravenous injection of 1.10 cc. of virulent blood of pneumoenteritis. 15 days later, he receives 2.10 cc. of virulent blood of *hog cholera*, 1.10 of which kills a fresh rabbit in 24 hours. A month later, third test against *swine plague*, the witness dies in less than 24 hours.

This very interesting case, relating to an animal which has resisted to three viruses, is specially remarkable by the strong local reaction which followed the first injection of pneumoenteritis, the application of which can only be found in the small dose of filtrated culture the rabbit has received.

No. 197.—Vaccinated by injections of diluted blood sterilized by thymic acid, 8 cc. altogether. Resists to five tests of *swine plague*; the witnesses die in less than 24 hours.

Three weeks after the last test the rabbit receives 3.10 cc. of virulent blood of pneumoenteritis, and has a little localized abscess which ulcerates spontaneously; the witness dies the third day. Five weeks later, but of virulent *hog cholera* supported without morbid symptom, the witness dies in less than 16 hours.

I have to relate less comparative experiments made with *hog cholera* and pneumoenteritis, as I had less rabbits vaccinated against these two viruses. I mention them all.

No. 284.—Vaccinated by three injections of small quantities 1.20 and 1.10 cc. of virulent cultures of pneumoenteritis; 12 days after the last injection he receives 1.20 cc. of virulent blood of *hog cholera*; the witness dies before the 18th hour. The rabbit resists four days longer, and at the post mortem shows, besides a very large oedema of the injected ear, a marked hyperæmia and hepatized foci of two lungs; the spleen is but little larger; the blood contains *hog cholera* microbes and gives pure cultures.

No. 232.—Vaccinated against pneumoenteritis by 5 injections, 8 cc., 75 altogether, of blood sterilized at 58°. Resists a test of pneumoenteritis. A month after, he receives an injection of 1.40 cc. of virulent culture of *swine plague*. The witness dies in seventeen hours and a half with typical lesions at the post mortem. This rabbit resists two days and a half, or he lives 40 hours longer than the witness; no fresh rabbit resisted as long. At the post mortem one finds, as internal lesions, a dry fibrinous peritonitis with a great number of microbes, the intestinal serous is highly hyperclonic and cloudy. The liver is covered at its inferior border by a yel-

lowish membrane, surrounding the spleen also. The blood gives a pure culture of *swine plague*.

No. 260.—Vaccinated against *hog cholera*; 6 injections of blood sterilized by heat, 8 cc. altogether. Resists a test of *hog cholera*; 4 days later receives 3.10 cc. of virulent blood of pneumoenteritis; two witnesses die in two and in three days; there is formation of an oedema on the injected ear, which disappears in a few days. New test against *hog cholera* a month after, weak local reaction seven days after injection of 1.20 cc. of virulent culture of *swine plague*; large abscess at the injected ear, the rabbit seems sick, but soon revovers. One witness, which has received the same dose of virus, dies in less than 24 hours, and a third rabbit, insufficiently vaccinated, dies in the same way the fourth day.

The dog vaccinated against *swine plague* receives one injection of $2\frac{1}{2}$ cc. of virulent blood of pneumoenteritis, which makes him sick for several days; a short time after he also resists an inoculation of $2\frac{1}{4}$ cc. of virulent blood of *hog cholera*.

To be complete, I shall also relate the experiment made upon rabbit No. 85, vaccinated against *swine plague*; he resists the test injection, the 4-XI. The 2-XII he receives an injection of 2 cc. of *swine plague*, sterilized at 58° , and the 4-XII, one of virulent blood of *hog cholera*. His weight, which was 2k-530 on the 2-XII before the test, is reduced to 2k-375 on the 4-XII. The 7-XII, the rabbit has a large abscess, its weight, 2k-180; the 16-XII, 2k-510; the 4-I, 2k-640; the 13-I, 2k-500. The abscess is opened and cauterized. The rabbit dies the 23-I, and presents, besides the abscess, a dilated stomach and a large spleen. The witness died 15 days before.

It is to be observed that the test inoculation against *hog cholera* has been made only two days after an injection of *swine plague* and that the rabbit had lost 150 grams of flesh, always indication of the debilitating effect of toxine. I think we ought to exclude this experiment.

In all the other cases, the rabbits vaccinated against *swine plague* have resisted the inoculation of *hog cholera* virus, or of infectious pneumoenteritis, while all the witnesses have succumbed. A fact to notice is, that it seems that the resistance to those two microbes is proportional to the degree of resistance against *swine plague*; for instance, rabbit No. 183, which had resisted but one dose relatively weak of toxine of *swine plague*, has presented the strongest reaction after the injection of pneumoenteritis.

A rabbit vaccinated against *hog cholera* has supported very well an inoculation of pneumoenteritis, which has killed two witnesses, and has resisted afterwards to an injection of *swine plague* culture, mortal for the witness and the rabbit insufficiently vaccinated.

Two animals vaccinated against pneumoenteritis died after the injection of *swine plague*, or of *hog cholera*, but they presented, contrary to the witness, a greater resistance; the duration of the disease has lasted longer than in all of the fresh rabbits, and the anatomical lesions were more complicated.

Before all, it was to know if the animals vaccinated against *swine plague*, that is against the most virulent microbe, would possess also the immunity toward the two other viruses; this fact has been confirmed by my experiments, repeated several times upon the same animal.

And again, it was to be presumed that vaccination against one microbe less virulent, as that of pneumoenteritis, would not be sufficient to protect altogether animals against *swine plague* and *hog cholera*; it only produces death at a later period.

I experimented upon only one rabbit vaccinated against *hog cholera*. The results are no less conclusive. This animal, vaccinated with a strong dose of blood which had proved very virulent before sterilization, has resisted to the test of pneumoenteritis and to that of *swine plague*.

The microbe of *swine plague* which was given to me was very virulent for the rabbit at the start; by a series of successive passages by the animal I have, not without pain, succeeded to render the microbe of *hog cholera* almost as virulent; I could probably increase that of pneumoenteritis in the same way.

There was then in our three microbes but one difference in the intensity of the virulency, and it is probable that the same fact has taken place in the various epidemics already studied.

Because rabbits vaccinated against pneumoenteritis have died with *hog cholera* and *swine plague*, we cannot, as Schweinitz has done, come to the conclusion that there were different microbes; one must first compare their reaction to that of fresh rabbits, and again take account of the opposite experiment.

To resume: 1st, rabbits vaccinated against *swine plague*

have resisted *hog cholera* and *infectious pneumoenteritis* without losing their immunity against *swine plague*.

2d. A rabbit vaccinated against *hog cholera* has resisted pneumoenteritis and *swine plague*.

3d. Two rabbits vaccinated against infectious pneumoenteritis have died, one in two and a half days of the injection of virulent culture of *swine plague* (the witness in 17½ hours), the other four and a half days after the inoculation of *hog cholera*, while the witness died in eighteen hours. Besides, the two rabbits presented at the post mortem, the lesions described above in animals insufficiently vaccinated and having died by the test injection.

4th. A dog vaccinated against *swine plague* has resisted the injection of strong doses of virus of pneumoenteritis and of *hog cholera*.

The experiments reported in this chapter allow us to conclude to the identification of the three viruses of *swine plague*, *hog cholera* and infectious pneumoenteritis of swine.

(To be continued.)

REPORTS OF CASES.

OSTEO CHONDROMA.

By Dr. E. N. KINNEL, M.R.C.V.S., Pittsfield, Mass.

By mail I have sent you a bottle containing a pathological specimen taken from a fine-bred colt, a yearling, with history as follows:

Head below eyes has always appeared clubby and full. Three months ago colt commenced to lose flesh and spirits, and a week ago was noticed to make a snuffling noise in breathing. This is when I saw him for the first time.

I found him thin, appetite capricious, bulging of the bones of the face from level of eyes down to inferior edge of superior maxillary bones, bulging most pronounced on right side; on pressure with thumb over maxillary sinuses a slightly yielding or springing condition could be detected.

An exploring needle could easily be pushed through the bones, but all that could be found in it was a little blood. I considered the case molletes ossium. This morning I trephined under the right eye and got the specimen sent. The large disc is from the outside. Under it was a smooth bony surface which I cut out with a scalpel; this is the smaller disc; under that was a kind of osseous carnified substance, an irregularly-shaped piece of which I cut out and put in the bottle with the other two pieces.

Percussion over these regions elicits a sound like that given out on tapping a piece of wood with dry rot.

Treatment so far has consisted in giving quinine and iron, under which the appetite has improved; also injections of the nostrils with oleaginous solution of iodoform. There is a discharge from both nostrils and slightly obstructed breathing.

If you will kindly give me your opinion as to the nature of the trouble, prognosis and treatment you will do me a great favor. I am at work on a report of a few cases for the REVIEW.

NEW YORK, Dec. 13, 1895.

Dr. Liautard:

Some time since Dr. Gottheil gave me some specimens and the enclosed letter from Dr. Kinnell to yourself, requesting me to examine the specimens at my convenience and make a short report to you. Press of other work has prevented my doing so until now. I return Dr. K's letter so you may have the full history of the case.

The three specimens sent presented similar characteristics. They were firm and bony, but a needle could be readily introduced into their substance.

Microscopically the following conditions obtained:

The tissue consists of normal bone structure interspersed by irregular masses of hyaline cartilage. Along the outer border of these deposits of cartilage are numerous osteoblasts, and in some places the formation of new bone may be observed. The connective tissue contains numerous spindle and round cells.

The above would indicate that the growth is an osteochondroma with a tendency to become sarcomatous.

Pardon my unavoidable delay.

Yours,

T. E. OERTEL.

SURGICAL INTERFERENCE IN CASES OF EPITHELIOMA OF THE
PENIS.

By C. CLATON, D.V.S., A. V. S. to Hospital Dept. of American Veterinary College.

On April 11th a chestnut gelding was brought to the clinic suffering with a large cancer of the penis with a profuse discharge of a most offensive odor. The mass was very irregular in shape and had several tracts leading to the urethra, and was unable to urinate without great difficulty and pain. Amputation of the organ was advised, but the owner not wishing to have an operation performed, and desiring some other form of treatment applied which would permit the animal to draw the penis within the sheath, we applied an elastic ligature around the two largest protuberances. Saw no more of the animal until June 1st, when he was admitted to the hospital to be operated upon. He was cast, secured so as to expose the inguinal region as in castration. All instruments and appliances were sterilized, a metal catheter was passed into the urethra, but in order to do this the mass had to be cut through posteriorly to the natural opening, as that seemed to be completely closed; a tape was wound firmly around the penis about the diseased portion, to prevent hæmorrhage and also to serve as a means of holding the organ outside of the sheath, and another at the end so as to keep the parts tense; the tissues were then dissected away, leaving about $1\frac{1}{2}$ inches of the urethra protruding; the artery was then tied, the protruding portion of the urethra slit on its inferior border, turned back and sewed to the stump, the taper bandage removed and animal allowed to rise, which he did much to our satisfaction, as he was an old horse, that is, about 15 years. The after treatment consisted of creolin solution injections and cauterizing the granulations that protruded between the stitches. In two weeks the wound was completely healed and the index finger could be passed into

the urethra with ease. In this case there was hardly any swelling at any time.

CASE NO. 2.—Roan gelding, with same trouble, was operated upon in the standing position but secured in stocks. The same method of operating was pursued in this case as in the previous one, but there was a troublesome hemorrhage and enormous swelling of the sheath and remaining part of penis which had to be supported in a suspensory; in about ten days a slough came away and the animal seemed to do very well until about a month later, when it was reported that a stricture had formed, this was broken down and the canal kept dilated.

The slough in this case I think was due to the enormous swelling, and included part of the urethra, therefore causing the stricture to form. How the animal is at present I am unable to say as he left the hospital a few days after the operation and we have not seen him since, the slough and the stricture being reported to us.

CASE NO. 3.—Bay gelding had had penis amputated some time previous, and when brought to the hospital was unable to urinate only by dripping; examination revealed a stricture of like condition extending about one inch from opening; upon closer inspection it looked very much as if in the operation urethra had been sewed to the surface instead of the stump of the penis, for when the organ was retracted it drew in a portion of prepuce. This was broken down and dilated three times a day; this form of treatment seemed to prove satisfactory, as the animal could now urinate very freely, in fact passed a larger stream than natural; whether it has gradually constricted again I am unable to say as I have not heard from or seen the animal since.

CASE NO. 4.—Roan gelding with a small growth about the size of a walnut situated at the opening of urethra and interfering greatly with the act of urination. This animal was cast and rolled upon its back, the feet were all left in the hobbles, unlike the first case, as one of his legs was drawn forward, the growth was dissected out of the edges of the urethra sewed to the tissue of the penis. Made a very rapid recovery.

These cases are recorded principally as illustrations of the necessity to follow the rules laid down in Prof. Liautard's Operative Surgery, which were introduced by him as far back as 1879 and 1880.

ABSCCESS ON THE SPLEEN.

By E. F. KOEHLER, D.V.S., Easton, Pa.

Allow me to briefly describe this case as follows: subject, a bay gelding aged twenty, used for driving purposes.

Was called Feb. 23, '94, found suffering with severe colicky pains, brought him to hospital, treated him for pain, which subsided in about 18 hours, but would have repeated attacks every few days, finally owner decided to have him destroyed.

The autopsy revealed a large abscess on the spleen, and adhering to the larger colon by large bands of peritoneum; by opening the abscess found three distinct cavities, containing thick yellowish pus with a disagreeable odor. The cavities communicated with each other, and, by means of short tract, with the interior of the larger colon. The caliber of the intestines was very much diminished, preventing the free passage of the fæcal matter, causing its accumulation in front of the constriction.

The only cause attributed is that about six month previous the driver struck him on the left side in about the region of the spleen with a two-pronged dung-hook which penetrated the skin and muscles.

PAROTID ABSCESS.

By H. D. FENIMORE, D.V.S., Knoxville, Tenn.

A gray gelding was sent to my hospital with one side of his head enormously swollen, and with a history of not having eaten anything for a week. He showed an abscess of the parotid region, which ripened in two days and was opened, with a discharge of a large quantity of extremely fœtid pus. At the same time a point showed itself on the course of Stenon's duct along the anterior border of the masseter mus-

cle. This was also opened, and in cleaning it out a spear of timothy hay was found in the duct with the head lodged in the opening in the cheek.

The horse went ten days without eating any solid food, but would drink hay tea. Before the abscesses were opened he developed a sudden lameness in his left hind leg, which soon disappeared to reappear in a very marked degree in his right front leg. The latter remained until the abscess healed, when it disappeared altogether.

Indications. In case of parotid abscess the duct of Stenon ought to be carefully examined, in and out of the mouth.

TRIPLE DYSTOKIA IN COW. .

By JOHN MINCHIN, V.S., Goshen, N. Y.

Was called on the night of Sept. 3, to see a cow that was in labor all day, but could make no progress, etc. Found the animal in a very exhaustive state, and straining violently. Genital organs highly inflamed, caused per empirical manipulations. On my attempt to explore found I could not satisfactorily on account of great "tenesmus," which called for narcotics to subdue. Administered sulph. ether, 3 iiii, which had the desired effect, and after a few minutes found an anterior presentation with fore legs fixed under the body of foetus.

On account of much genital inflammation it took just forty minutes to get the first triplet, which of course was asphyxiated, as was the whole three. My next discovery was a posterior presentation, hind legs fixed under body also. But, having more room, the extraction of No. 2 was a little more easy. After douching the patient over the head, etc., gave half pint of good spirits, had supper, and got ready to leave. But as I always take a look at patient ere leaving, this time was no exception to my rule.

On entering stable found more tenesmus, which was evident there was more trouble, which I reported to owner, who pooh-poohed, saying who ever heard of such a thing. Nevertheless, I made the examination, and to my surprise

found a third inhabitant. Fearing to give the cow any more ether, and having so much more room, I delivered her of the third calf, which was almost as large as his two twin brothers; they weighed respectively 51, 48, 41 lbs., total, 140 lbs.

Had I been called in the early stage of parturition, there is no doubt in my mind but I could perform the task and make a live delivery. Though I have been in practice over forty years this is the first case of triplets I ever witnessed. I have also found in difficult parturition the safest way at delivery is to etherize your patient, when a vast more easy manipulation is accomplished. This cow has made a good recovery.

EXTRACTS FROM EXCHANGES.

FRENCH REVIEW.

THE MICROBE OF DISTEMPER OF DOGS.

By DR. BRUNO GALLI-VALERIO.

After a careful, but brief consideration of what has been written on this interesting subject, and a claim to priority on the discovery of the microbe in the central nervous system, the author comes to the conclusion that, first, in the young animals affected, one always finds in the lungs and the central nervous system an ovoid bacillus whose dimensions vary between 1.25 and 2.5μ in length upon 0.31μ in width; second, this microbe gives characteristic cultures upon gelatine at 18° to 20° , and upon gelosis at 38° to 40° ; first, the inoculation of these cultures in veins, under the skin, and in the lungs of old dogs, has not given rise to the symptoms of the disease in young animals; fourth, the inoculation of a culture with brain substance under the skin of a five or six-months-old dog, has produced the disease of the young and—important fact—with the characteristic pulmonary and cerebro-spinal symptoms.—*Four. of Zootech.*

TUBERCULOSIS OF THE EYE IN CATTLE.

By M. MONCET.

Ocular tuberculosis has been but frequently observed in bovines, not more than six cases being recorded by Mathieu, Hess, Roeder and Edelmann. The author reports one case which he observed in an eight-year-old cow. The animal was in fair condition, coat perhaps a little staring, but the skin was supple, with little or no adherence to the ribs; there was no discharge, no abnormal sensibility of the chest. No information given as to the cough. The left eye was slightly atrophied and presented upon almost the entire cornea granulations of various dimensions, gray-yellowish in color, between which the cornea could be seen in spots with its ordinary aspect. Sight was entirely gone. Examination with the ophthalmoscope was impossible on account of the opacity of the cornea. The right eye was healthy.

At the post mortem tuberculous lesions were found in the thoracic and abdominal cavities, and the histological examination of the eye, with experiments and cultures made of the granulations and other lesions of the eye, confirmed the nature of the disease and the correctness of the diagnosis.—*Revue Veterinaire.*

INJECTIONS OF VAN SWIETEN LIQUOR IN THE TREATMENT OF TRAUMATIC SYNOVITIS AND ARTHRITIS.

By Mr. LABAT.

The satisfactory results obtained with this form of treatment have suggested its frequent use in traumatism around the principal articulations, and, as results, Mr. Labat reports his observations among five principal cases which justify him to a distinction in the condition of the wounds. These five observations include one of suppurative synovitis of the tarsal sheath in a horse, one of arthritis and suppurative synovitis of the knee in a mare, one of suppurative arthritis of the stifle in a mare, one of arthritis of the knee with suppuration, and one of synovitis of the sheath of the anterior extensor of the phalanges in a mare.

Of these five cases which, besides the free opening of the fistulous tracts, were treated with the free use of the liquor of Van Swieten in injections, the first and fifth made a recovery, while the second, third and fourth had to be destroyed. From this result the author concludes that the wounds of the tendinous sheaths have great chances to heal by the antiseptic and cleansing qualities of the Van Swieten dressings, but that these are less certain in their effects against the wounds of large articulations, and that in those injuries, their efficacy diminishes and may lose its value in proportion to the length of time that may have elapsed from the beginning of the diseased process.—*Ibid.*

TREATMENT OF TETANUS WITH OXYGENATED WATER—
RECOVERY.

By Mr. G. CAUSSE.

This form of treatment, already recommended by Mr. Aureggio, who had already obtained favorable results in two cases of that affection, was put in practice upon an animal, a mare, eight years old, of nervous disposition, which was suffering from an attack of traumatic lockjaw resulting from a punctured wound of the right hind foot received some two weeks previous. The treatment, the first day, was begun with twelve subcutaneous injections of oxygenated water with a syringe of five grammes, six injections on each side of the neck, and combined with mustard frictions on the throat and the masseter muscles, and forty grammes of chloral in rectal injections; heavy blanketings; nitrated watery mashes. The subcutaneous injections on the second day were increased to fourteen and kept up for ten days with little modification, and on towards the tenth day the number of injections seemed to be followed by a marked improvement.

On the following morning a severe relapse manifests itself, which is supposed to be due to the reduction of the oxygenated water. One hundred and fifty grammes are then injected by fifteen injections in the morning and the same quantity given again in the evening, with the addition to the general treatment of 24 grammes of tartar emetic.

This change of treatment is followed by an improvement of the symptoms, which lasts for a week, when a second relapse takes place. The dose of oxygenated water is carried to two hundred grammes, which are given for about a month, when it is gradually reduced and stopped. The injections have given rise to numerous abscesses, which were treated with local applications of the same water. The author concludes by recommending the use of large doses at once, 200 grammes, and even more if the case seems to indicate it.—*Ibid.*

ITALIAN REVIEW.

TUBERCULOSIS OF THE UDDER.

By DR. FIORENTINI.

After experiments made in 1891 the author has concluded that the milk of tuberculous cows could contain the bacillus of Koch and be infectious. Continuing his observations and examining the udders of tuberculous cows killed at the abattoirs of Milan, he observed that the bacillus of Koch was missing in cows with more or less generalized tuberculosis, but whose udders were healthy. And, on the contrary, he found that in cows which had diffused, or miliary tuberculosis, the mammary glands contained the bacillus.

This miliary form of tuberculosis is that which is most commonly met with in the udder, but it is the most difficult to diagnosticate while the animal is living, and, again, it is never primitive, but secondary to the tuberculosis of the other organs. At the time of his first experiments, Dr. F. had found in the milk, offered for consumption, a bacillus whose cultures inoculated to fowls give rise to violent diarrhoea. This bacillus was the *B. coli commune*, which became pathogenous for rabbit and guinea-pig and which is imported from the stall into the milk at the time of milking. From these the author advises the application of severe hygienic measures (inspection of infected stables) to be executed by the sanitary service of countries where tuberculosis exists.—*Allevatore.*

SOME OF THE FIRST SYMPTOMS OF ACTINOMYCOSIS
OF THE TONGUE.

By DR. N. BUTTI.

These are ptyalism without apparent cause, and roaring. After observing these first phenomena, the author says that he soon observed the appearance of tumors at the jaws and in the throat. It was only after the publication of Thomassen upon that disease that he tried the treatment of these first manipulations with the iodide of potash. Then not only the roaring of the ptyalism disappeared, but the tumors of actinomycosis failed to develop themselves.—*Clinica Veterin.*

INJECTIONS OF TUBERCULIN IN MILCH COWS.

By MR. G. CROCE.

The author, director of the abattoir of Civita-Vecchia, injected tuberculin to five cows, suspected with tuberculosis. Two of these gave a thermic reaction of more than two degrees, and a third a reaction of more than one degree. The municipal authorities have forbidden the use of these cows for the production of milk. An example to follow, says the *Clinica Veterinaria*.

SPANISH REVIEW.

ACCIDENT OF CASTRATION.

By E. PON, of Villanueva.

The horse upon which the accidents were observed was 15 years old and suffering with a chronic affection of the lungs; had not been prepared for the operation, and was in general bad condition. Nevertheless he recovered as well as the other animals which were operated at the same time.

The operation was that of torsion, and from the first step the difficulties began. The excessive power of contraction of the cremaster, not in proportion to the state of the animal, was overcome by gentle slaps on the face, and once the inguinal sheath open, the cord, very large, was seized with the

nippers. All at once, as the fourth twist was taking place, without excessive tractions of the operator and without struggles from the animal, the cord gave way with a noisy snap and followed by a cracking noise analogous to that of dry straw crushed. An abundant hemorrhage followed, which was rapidly arrested with ice-water.

Twelve hours after, the hemorrhage returned, weakening the patient considerably. Cast a second time, the vaginal sac was cleaned of the clots of blood and then hernia of the large omentum was discovered. This was reduced and steps taken to ligate the spermatic artery. But in stretching the cord so as to apply the ligature, the hernia returned. This being reduced a second time, the scrotum was packed with oakum and wadding moist with cold water, and after this everything went on well.

In castrating by torsion, practitioners will do well to guard against an abnormal fragility of the cord, which, though rare, is nevertheless no less dangerous.—*Gacette de Medc. Veterin.*

CURIOUS CASE OF STOMACHAL INDIGESTION.

By M. ESTEBAR SANCEDO.

A gelding, in good condition, of sanguine constitution, seven years old, became ill with colic after eating one quart of oats, some hay, and drinking afterwards. The next day the author observed that he had a small pulse, accelerated with an anxious breathing, continual dull pains, a tendency to lie on the left side and to get up immediately afterwards.

A diagnosis of stomachal indigestion was made, prognosis guarded; treatment, 150 grams of sulphate of soda, with 10 of ether in an aromatic infusion given as a drink. Bleeding, with removal of 2 kilog. of blood. Severe diet. The pains then subsided and the horse was taken out for a walk. From the first steps it was observed that the animal was almost entirely unable to walk, and all at once, at each step that he would make he was seized with very violent, jerky, nervous spasms, which threatened him from sudden fall. It

was only—thanks to its natural vigor—that he was able to stand up.

Supposing that these were due to an acute pain caused by the bruises the animal had received while sick, he was returned to his stall and camphorated frictions made over his legs.

At the second visit everything seemed to have returned to their normal condition and all functions working well. Another bleeding, smaller than the first, was made, rectal injections and nitrated drinks were prescribed. The animal recovered.

Questions asked.—Were the spasms the result of pains from the bruises? Were they that of reflex sympathetic action or only simple manifestations of vertigo.—*La Veterin. Espanola.*

REVIEW OF BIOLOGY.

RESEARCHES UPON THE ORIGIN OF THE LARVÆ OF CESTRIDES IN THE STOMACH OF DOGS.

By M. A. RAILLET.

On different occasions the presence of the larvæ has been mentioned in the digestive canal of carnivora.

What is their origin, or, rather, in what manner did they reach the stomach? To answer this question two suppositions are possible. Some (Colin, Brauer) admit that carnivora swallow them with the detritus of horses which they may eat, and that these larvæ implant themselves in the new ground they have reached. The dog observed by Colin was born at the beginning of the winter, and consequently could not have received a new-laid egg of Cestride, and, besides, he had been always fed with the detritus of others. Others think, on the contrary, that the gastric larvæ of the dog come from eggs deposited upon its own skin, or swallowed with his food.

By experiments, made for two years, Mr. Raillet establishes the fact, according to the views of Colin and of Brauer, that the larvæ of the *Gastrophilus equi* absorbed by the dog

can fix themselves in his stomach and live there.—*Comp. Rend. Soc. Biol.*

UPON THE HISTOLOGICAL ALTERATIONS OF THE LIVER IN TUBERCULOUS ANIMALS.

By Messrs. CADIOT and GILBERT.

The authors have submitted to a histological examination the liver of various mammalia, monkeys, dogs, cats, guinea-pigs, horses, bovines, which had died with tuberculosis, or which, being thus affected, were destroyed.

The lesions of the liver in tuberculous animals, like that of men, do not exclusively consist in the existence of circumscribed tubercles or in tuberculous infiltration. The cirrhosis may be met with, and the hepatic cell is not always free from disease. The cirrhosis is not common. They found it in the incipient stage in one guinea-pig, in one cat, two dogs, one horse and one steer. They saw it assume a well-completed form in one horse of nine years, affected with generalized pulmonary tuberculosis with cavities, and accompanied with adenopathy of the mediastinal glands.

The alterations of the hepatic cells are less important in the animal than in human tuberculosis.

The amyloid degeneration (of the vascular coats as well as of the hepatic cells) does not exist in animals; and it is the same with the pigmentary degeneration. The cellular necrobiosis is exceptional. The fatty degeneration is also very rare. The conditions which give rise to such differences in the condition of the hepatic cells in different species during the course of some microbial diseases are still unknown.—

Ibid.

THE FAUNA OF CADAVERS.

By Mr. P. MEGNIN.

It is a well known fact that myriads of insects take possession of cadavers whose spontaneous generation was accepted long ago. The author has observed that these insects (the *workers of death*) appear successively, and in the same regular order. He has counted eight different *corps d'armee* from the moment of death to the entire destruction of the cadavers.

The recent studies upon putrefaction show that microbes of different species follow each other regularly in the many complex phenomena of putrefaction, and that their action is every time marked by the formation of gases with various odors; these gases, detected by the insects even at long distances by their powerful and delicate olfaction, tell them of the degree to which the putrefaction has arrived, and thus allow them to select the one most convenient for the deposit of their eggs. Thus is explained the regular succession of the insects that Messrs. Megnin and Brouardel have called the workers of death, which are, consequently, the true reactives of the various degrees of putrefaction. These insects, in fact, continue their work even after the work of the microbes is ended; if there remain some small organic fragments, tendon, ligament or skin, which, hard and dry, have resisted putrefaction, they are destroyed by these gnawing insects, which thus come to complete the work of their predecessors.

The first *corps d'armee* which enter a cadaver is formed of flies of the *Curtonevea* and *Calliphora* species; their presence is even sometimes detected before death. They prefer fresh meat.

The second is composed of *Lucilia* and *Sarcophaga*, with—in some cases—*Uropada*. They are present only when the odor of putrefaction is well manifest, from three to six days after death.

The third is constituted by coleopters of the *Dermestes* kind and lepidopters of the *Aglossa*. They appear three or four months after death.

The fourth consists of some flies, *Pioplata* and *Anthomyia*, with coleopters of the *Necrobia* species. They appear toward the eighth month.

At a later period, when the soft tissues are transformed into a blackish pulp, come the flies of the *Ophira*, *Phora* and *Tyreophora* species. The cadaver is then about one year old.

When it is eighteen months or two years old, arrive coleopters of the *Silpha*, *Hister* and *Soprinus* species, with acari of *Tyroglyphes*.

The seventh army is composed of coleopters and lepidop-

ters whose duty it is to destroy all hard, dry substances which have resisted the putrefaction. They appear after the third year. They are *Anthrema*, some *Dermestes*, and a few *Tineola*.

The last group of these workers are coleopters of the *Tenebrio* and *Phisus* kinds. They are found in cadavers going back four years.—*Ibid*.

INVESTIGATION OF BOVINE TUBERCULOSIS.

WITH SPECIAL REFERENCE TO ITS EXISTENCE IN IOWA.

By PROF. N. STALKER and PROF. W. B. NILES.*

In the bulletin issued by the Experimental Station of the Iowa Agricultural College, the results of the many observations made by the staff are presented, especially to the farmers, with the conclusions drawn from tests and experiments made at the station, and also some additional and well established facts on the subject of tuberculosis. Speaking of these last the bulletin says:

The following may be said to cover a portion of the ground that has been practically cleared from doubt.

(1) Tuberculosis of the lower animals is identical with human consumption.

(2) It is an infectious disease.

(3) The disease may be transmitted from man to the lower animals and from the lower animals to man.

(4) Tuberculosis causes more deaths in the human family than any other disease.

(5) Cows are especially susceptible to the disease, and are extensively affected by it.

(6) Milk from tuberculous cows may convey disease to the consumer.

(7) Milk from tuberculous cows having non-affected udders may convey the disease.

(8) The flesh of tuberculous animals may convey the disease.

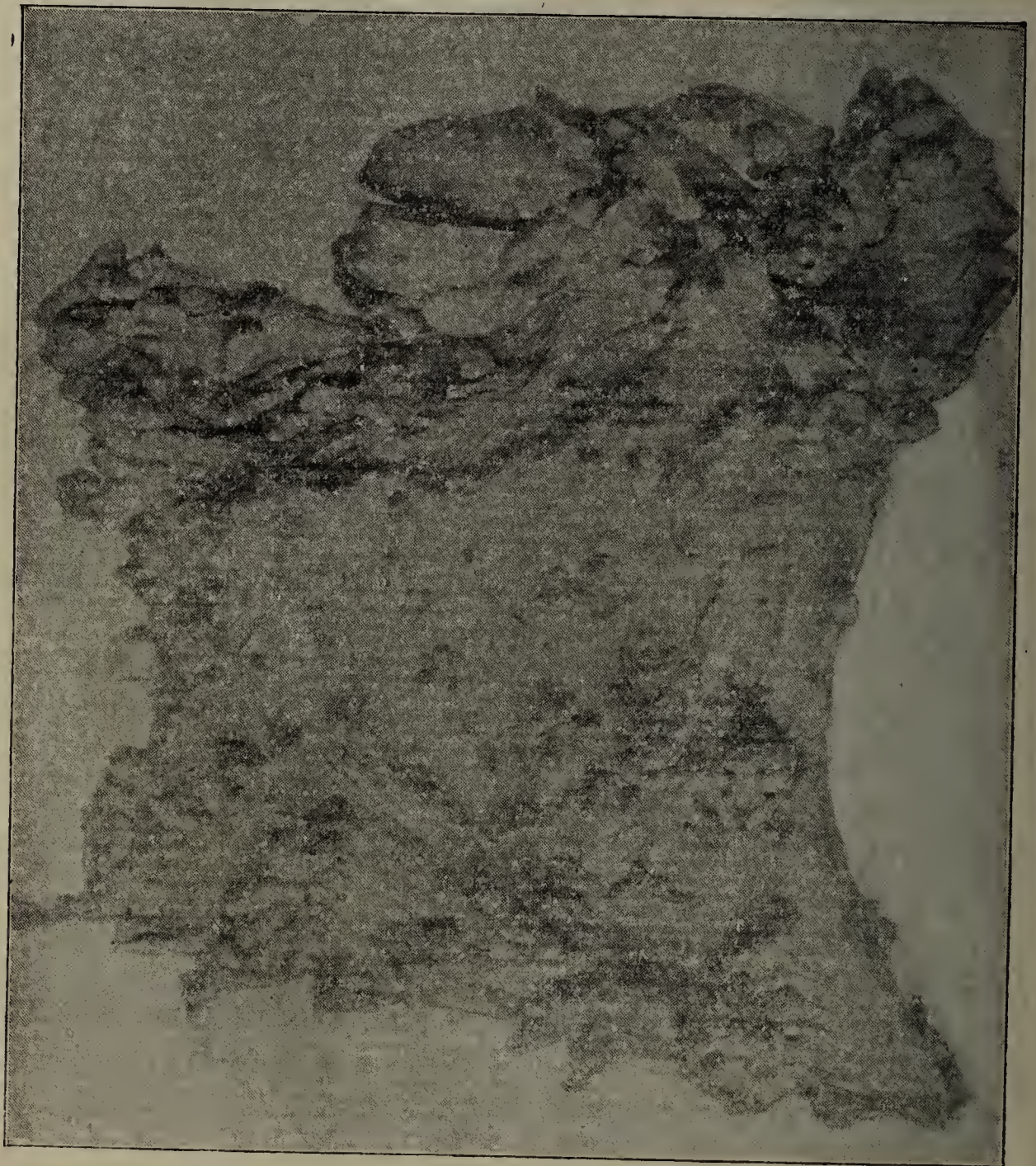
*Extract from Bulletin No. 29.

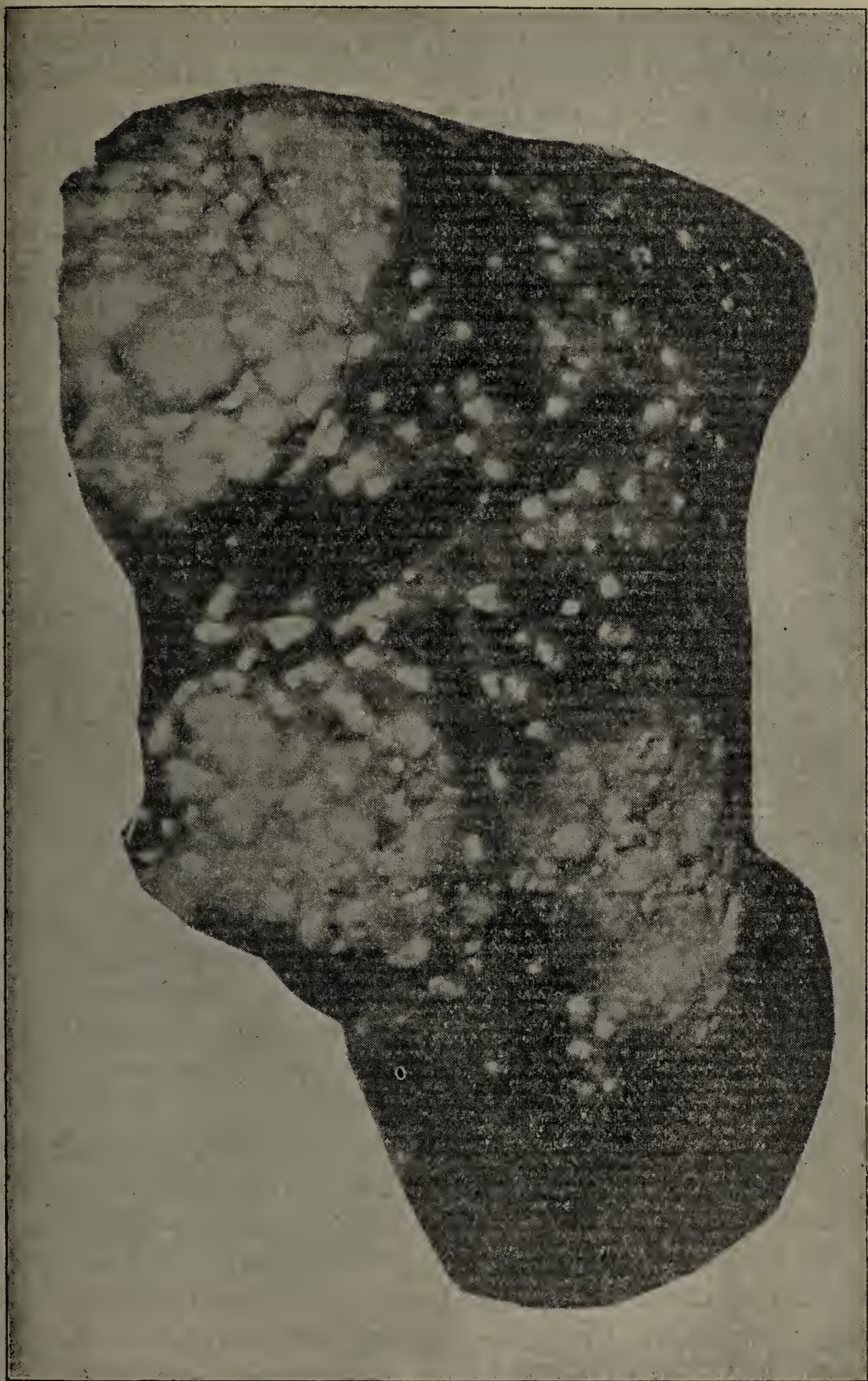
(9) A large proportion of the cases cannot be recognized by clinical examination.

(10) No test yet discovered, other than that afforded by tuberculin, can detect any considerable proportion of cases in the living subject, and this test is practically infallible.

(11) Injections of tuberculin cannot produce tuberculosis, nor are the results harmful.

The experiments made by the Iowa Experimental Station about the tuberculin test and its reliability, are presented and illustrated by a number of tables where the reports of the condition of the cows submitted to the tuberculin test are given, and also by several wood cuts, amongst which, through the Sta-





tion's kindness, we produce that of a hypertrophied liver with tuberculous areas here and there, and also that of a part of the mesentery of an animal showing the presence of the tubercles scattered over the surface.

In relation to the value of the tuberculin test, which has already been so extensively demonstrated, we find in the bulletin these remarks, which are of great value :

It has not been alone the purpose of the Station to prove or disprove the reliability of the tuberculin test, but to compare its value as a diagnostic agent, with other means of recognizing the disease. To this end a large number of tests and post mortem examinations have in many cases revealed extensive tuberculous lesions. These have been found in all parts of the body, including extensive diseased conditions of the mammary glands.

EXPERIMENTS IN FEEDING THE MILK OF TUBERCULOUS COWS.

The use of milk on experiment animals for the purpose of artificially inducing the disease in otherwise healthy individuals is a practical way of putting to the test some of the theories as to sources of danger. If the milk from tuberculous cows, either taken in the ordinary way, or injected directly into the circulation can induce tuberculosis, the fact becomes one of no ordinary moment. The significance of the experiment has a two-fold importance.

First.—It enables us to account for many cases of the disease in young cattle. It has been shown by repeated observations that congenital infection is rare. However, calves but a few months old are frequently found to be infected.

Second.—If milk from tuberculous cows possess infectious properties, the health and safety of the human family becomes the important part of the question. If feeding the milk to lower animals under ordinary conditions will induce the disease, there is no avoiding the conclusion that it can be induced in the human family under the same conditions. This experiment has been repeated with sufficient frequency, and under conditions to prove the certainty of results beyond continuing. As to the presence of the disease in the State, to its origin in Iowa and its extent, we extract :

ORIGIN OF THE DISEASE IN IOWA.

It is quite impossible to trace accurately the appearance of the disease in our State. We have known of its existence among our cattle for twenty-five years, and undoubtedly it traces back to a very early period in the history of our cattle industry. We first became acquainted with it in herds of well-bred cattle; especially those that were represented by imported individuals. Comparatively little was known at that time of the history and real danger from the disease, and nothing of the modern methods of detection. But long before there were any laws on our statute books making provisions for control of contagious diseases, we assisted many of our breeders in their endeavors to get rid of tuberculosis, by selecting out and destroying the affected individuals in their herds. The introduction of imported animals was doubtless an important factor in the introduction of the disease.

TO WHAT EXTENT DOES THE DISEASE PREVAIL IN IOWA?

The work done through this department during the last eighteen months, the occasional discovery of a seriously affected herd, and more frequently less severe outbreaks, have led to the frequent repetition of this question.

While a considerable number of tests have been made, and these in various parts of the State, we are not yet in possession of a sufficient amount of evidence on this point to furnish more than an approximation to a definite answer. The evidence of the existence of tuberculosis has been demonstrated over and over, but to attempt to deal with percentages would be to enter the field of conjecture. It must be kept in mind that tests have been made where some form of disease was known to exist, or was believed to be present. The unsuspected herd has not as a rule been tested. Under these circumstances, the number of cases found to be diseased in proportion to the whole number tested will greatly exceed the general average of cases in the State to the entire number of cattle. Again, the proportion of the affected individuals in a diseased herd varies greatly. The time during which the disease has existed, the conditions under which the animals

have been kept, whether closely confined or in the open fields; these and many other conditions will have a marked influence on the degree to which the herd has been invaded. We append the figures taken at random from tested herds, that will show the extent to which the disease prevailed in these instances.

About fifty herds have been tested in the counties of Blackhawk, Kossuth, Story, Boone, Page, Harrison, Sac, Wappello and Floyd. Taking 873 animals as they occur in these herds that were subjected to the test, 122 reacted and were pronounced tuberculous. These facts give some suggestions as to the distribution of the disease, and the per cent. that may be reasonably expected to react in herds that are reported for examination.

After giving the symptoms of the disease, and considering the relation of meat and milk supply to the public health, the bulletin approaches the important subject of the eradication and of the prevention of the disease as follows:

HOW CAN HEALTHY HERDS BE SECURED, AND HOW CAN THEY
BE KEPT FREE FROM DISEASE?

This is the practical question toward which all the others tend. It is of little consequence to know that disease exists unless that knowledge can be made to aid us in averting the evils we have found. The means by which total extermination of the disease can be accomplished do not seem to be in sight. So long as there remain cases of consumption in the human family, there remains the possibility of occasional re-infection of bovines. But the probabilities of infection from this source are remote, and should not be taken as arguments against any restrictive measures that might be adopted.

While absolute extermination of the disease at once may not be practical, we believe it to be entirely feasible to so far restrict its dangers as to render them of slight consequence. The State has already with small expense eradicated the disease in a considerable number of dairy herds. And, what is of more value to the public at large than freeing these herds from disease, it has demonstrated the possibility and the

practicability of the plan, and has done much to educate the people as to the sources of danger. The result is that many owners of herds have voluntarily, and at their own expense, had the tuberculin test applied, and the diseased animals destroyed. The work the State has done is in this way being supplemented; and the practice of testing dairy cows is likely to have a very large increase in the future, without the aid of compulsory measures. Once the herd is free from disease, it can readily be kept in this condition by exercising due precaution in the introduction of fresh stock. Dairy men who have had unfortunate experience with the disease, have adopted the practice of admitting none but tested cows to their purified herds. This practice, if uniformly adopted, would very soon render the dairy herds of Iowa free from tuberculosis. If, in addition to these precautions, similar vigilance were exercised over the introduction of breeding stock to the herds, the chief sources of infection could thus be shut off. If restrictive measures of this kind were applied to these two classes of cattle, practically all the cases of tuberculosis in the State would soon be found, and its ravages reduced to the minimum. The measures adopted in a few score of dairy herds in the State, if applied to the remainder, would go very far toward eradication. It is possible to reach most important practical results without the expenditure of large sums of money or the sacrifice of important interests.

All animals suffering from the disease in any of its stages should be at once removed from contact with other cattle. It is our judgment that any plan which contemplates keeping tuberculous animals on the farm, and attempting to avert danger by segregation and other like precautionary methods, will defeat its own ends. The less the number of possible sources of infection in the country, the more successful will be the efforts at eradication. Buildings where tuberculous animals have been confined are to be regarded as infected, and no healthy animal should be assigned quarters in such enclosure till thoroughly disinfected.

It is true, a single test may not in every instance free the entire herd. After-infection may take place. It would be

wise in those cases where a number of badly affected animals have existed to take the precaution of applying additional tests some months after the first. All this involves care, the expenditure of a certain amount of money, and the occasional loss of an animal. But the animal already suffering from an infectious and highly fatal disease cannot be considered to possess any high value. The inconvenience and expense attending such precautions are small in comparison with the loss and risk involved in allowing the disease to run its natural course in the herd, and the sale of dangerous products for human consumption.

SANITARY LEGISLATION.

From the *American Agriculturist* we extract a concise aperçu of the legislation existing against tuberculosis in a few States:

MAINE.—A commission has charge of all animal diseases, being allowed \$5,000 for all purposes. New laws allow periodically one quarter of value upon the basis of health before infection. Maine claims to be entirely free from tuberculous cattle, having quarantined against the disease for several years, but glanders is frequent and is spread by Western horses.

NEW HAMPSHIRE.—The cattle commission (composed of the secretary of agriculture, master of State grange and State board of health) has full power to investigate and destroy animals, and is authorized to pay one-half the value computed for the animal in a healthy state (if it has been three months within the State), and to spend not more than \$10,000 in one year. The law does not contain any provision relative to tuberculin.

VERMONT.—The legislature of last year passed a law which had no limit whatever as to the amount which should be expended. It gives one-half of a disinterested appraisal (not to exceed a total value of \$40) to the owner of the animal killed in case it is found to be affected with disease, and

the carcass and full appraisal in case the disease is not found. The law is enforced by the State board of agriculture, who have employed several assistants in connection with the tuberculin test. Tuberculin is used only with owner's consent, "and farmers without exception help the commission." The law also gives quarantine privileges to all animals coming into the State.

MASSACHUSETTS.—Tuberculosis has long been talked about in this State, since the herd in the Massachusetts agricultural college was found to be affected with it in 1877–8. The first act to prevent the spread of tuberculosis was passed in 1892; it provided for local inspectors and killing of condemned stock without appraisal, but if after killing it proved healthy full value was to be paid. The law of '93 defined tuberculosis as contagious. The law of 1894 provided half pay for cattle killed, determined upon the basis of health before infection, limit \$100, provided said animal had been within the State for a year prior to showing evidence of the disease. Up to October 4, 1894, only the physical test had been used; on that day, the State cattle commission voted to test with tuberculin all suspected cases reported by local inspectors, and to admit to the State only tested cattle, all others to be quarantined until tested at importer's expense; also to test with tuberculin every animal in the State, branding those that did not respond and killing the rest.

RHODE ISLAND.—Prior to 1892, the State board of health had charge of cattle diseases. Since then it has been turned over to the State board of agriculture with an appropriation of \$15,000. The board have power to appoint a veterinarian, and their work is carried out by appointing a cattle commissioner in each county and an appraiser at large. For cattle that are killed, if found diseased, one-half the appraised value is paid; if the animal is found healthy, the full value is paid, and a limit of \$50 is placed upon any ordinary or grade animal and \$100 upon any thoroughbred animal; and the animal must have been owned at least six months in the State before the owner can get an appraisement. The board is given authority to seize carcasses of animals in the slaughter houses

that were affected and condemn them, paying the full appraisal value the same as though the animal were killed by the board, and quite a large number of animals have been so seized and condemned.

CONNECTICUT.—The law of 1895 authorized the commissioners on diseases of domestic animals to quarantine against suspected cattle within or without the State. They have power to make and enforce rules for stable sanitation. Tuberculin may be used only with written consent of owner. Cattle owned within the State three months or more, if condemned, shall be paid for by the State at their actual value at time of appraisal, prior to being killed.

PENNSYLVANIA.—The act of May 21, '95, creates a live stock sanitary board consisting of the governor, secretary of agriculture, dairy commissioner and State veterinarian. It has full powers in relation to diseases of domestic animals, "provided, in case of any slowly contagious diseases, only suspected or diseased animals shall be quarantined." Condemned stock paid for their actual value and condition at time of appraisement, not to exceed \$25 for any infected animal of grade or common stock or \$50 if registered; horses \$40 to 50. The board or its agents have right of entry upon premises to inspect stock. The law does not mention tuberculin, but a liberal interpretation apparently justifies its compulsory use. No limit to total sum that may be spent except approval in writing of governor and secretary of agriculture.

NEW JERSEY.—The law of 1895 provides for a commission of seven—the secretary of agriculture, the governor and five others appointed by him. At request of two members State board of health, or State dairy commissioner or owner of animals, the commission shall investigate, and if it find disease may enforce its own rules; condemned cattle shall be appraised by three disinterested persons on "the basis of market value" limited to \$100 for registered and \$40 for other stock, and the State pays three-fourths of this value. Expenditures for all purposes limited to \$5,000, commission serving without pay; it reports to board of agriculture. The commission is aiming to aid farmers by inspecting their herds and

stables, and showing how sanitary conditions should be made right; nothing said in law or rules to date about tuberculin.

MARYLAND.—Live stock sanitary board; State pays full value of appraisal in diseased condition for cattle killed for exotic diseases (Texas fever, etc.). Nothing done with tuberculosis, stock owners oppose use of tuberculin even if guaranteed full value, and board is unanimous that Federal Government must assist the States.

DELAWARE.—No legislation.

OHIO.—No legislation.

IN OTHER SECTIONS.

THE FAR WESTERN STATES each have a State veterinarian or commission, that has general charge of all animal diseases, usually with full power to slaughter any animals with infectious or contagious disease. This would be held to cover tuberculosis if it was found, but very little evidence of the disease has been found, except in a few dairies near cities. Portland, Oregon, has paid \$50,000 during the past few years for diseased stock killed, including cows; the law allows owner full value and cost of killing; tuberculin test used. Colorado allows \$1,000 a year for investigating for bovine tuberculosis; last year 20 suspected herds tested, but only three distinct cases found; otherwise no special mention of the disease, though existing law gives State veterinarian ample power. California vets tried to secure tuberculosis inspection law in last legislature, but were overwhelmingly defeated.

DELAWARE.—No legislation. An attempt to pass a tuberculosis act in 1893 failed by a vote of 39 to 38. It provided for a State veterinarian under the cattle commission, whose duty would be to inspect cattle, kill the infected "and demonstrate to the satisfaction of the owner that the disease really exists, and must in cases of doubt furnish material for disinterested scientific examination, and proof of the accuracy or inaccuracy of his diagnosis." Inspections were to be made on request of State or local boards of health or of two or more persons; appraisal not to exceed \$40 per head; if diseased, $\frac{1}{4}$ such appraisal paid by State, $\frac{1}{4}$ by county, but if not tu-

berculous, $\frac{1}{2}$ each by State and county, or full compensation. State and county expenditures for cattle killed limited to \$1,000 per county; the county to stand other expenses up to \$500.

NEW YORK.—Chapter 487, laws of 1892 (slightly altered in chap. 661, '93) placed tuberculosis and glanders in charge of the State board of health with full powers; condemned stock to be appraised at "its sound value;" if post mortem reveals tuberculosis, State pays owner half such appraisal, not more than \$60 being paid for a registered and \$25 for an unregistered animal, but if not diseased full value is paid; \$30,000 appropriated to pay for cattle.

IOWA.—State veterinarian has full powers regarding contagious animal diseases, but tuberculosis is not mentioned in statute; \$3,000 annually may be expended, including payment by State for cattle killed at its "actual value in its condition when condemned." The State vet and State board of health have given much attention to this subject, but no attempt has been made to enforce inspection and slaughter of tuberculous stock.

WISCONSIN.—No legislation; "financial interests involved in the dairy business as a rule strenuously oppose any extended agitation." State veterinarian has jurisdiction, and cattle killed by his order are paid for by the State at two-thirds their appraisement. He is allowed \$500 for experimental work and "it is used chiefly on tuberculosis."

MINNESOTA.—"No special law; State board of health deals with the matter in a general way. Some horses are tuberculous." State veterinarian has used tuberculin, and suggests that tuberculin be applied for free testing of suspected cattle by local boards of health, all that react to be slaughtered, and if found to be healthy to be sold for beef, other carcasses to be burned or sent to rendering tank. Existing law provides that any diseased stock killed by local boards shall be appraised (taking into account existence of disease) and paid for at such appraisal by the town, but if condemned by the State board towns pay only one-fifth appraisal, State paying balance.

MICHIGAN has a State live stock sanitary commission of their farmers, and a State veterinarian who is paid \$5 a day. It has full power in animal diseases, to fix value of condemned cattle at date of appraisal, which shall be paid by State. The commission has caused tuberculin to be used "in all cases reported where there existed a fair presumption that cattle were affected with tuberculosis."

INDIANA.—"State live stock sanitary commission has full powers in contagious or infectious diseases of cattle, but the law makes no mention of tuberculosis, though the board of health has urged county commissioners to appoint veterinarians or physicians to inspect dairies for it. Cattle to be killed by the commissioners are appraised by it and the amount paid in full by State; the State veterinarian shall be paid \$2,000 a year only if he devotes his time entirely to the commission."

SIXTH INTERNATIONAL VETERINARY CONGRESS.

The following resolutions were submitted to the Sixth International Veterinary Congress, which held its sittings at Berne, from the 16th to the 21st of September, 1895.

I. International Veterinary Sanitary Police.

1.—There ought to be instituted an international bureau for the furnishing of information regarding veterinary sanitary affairs and for the publication of an international bulletin regarding the contagious diseases of domestic animals. Adopted unanimously.

2.—The Swiss Federal Council ought to be invited to take the initiative in calling together an international conference to be charged with the elaborating of a convention regarding the international traffic in cattle. Adopted unanimously.

II. Mallein.

1.—Mallein is a powerful agent for assuring the diagnosis of the disease in cases suspected of glanders.

2.—The systematic use of mallein in stables in which glanders prevails is the best means to bring about extinction of the disease. Adopted by 49 votes against 39.

3.—The various governments are invited to provide the funds necessary to definitely settle the value of mallein infections as a measure of sanitary police, this to be done by means of experiments in which a certain number of horses would be artificially infected and then treated with mallein. Adopted unanimously.

III. Tuberculin.

1.—In view of the great divergence of opinion expressed during the discussion on tuberculin, the Congress should refrain from passing any resolutions on the subject. Supported by 3 votes only.

2.—Tuberculin is a valuable method of diagnosis, and it is capable of rendering the greatest service in the struggle against tuberculosis. There is no occasion to abandon the employment of this substance under the pretext that it may provoke an aggravation of the disease. Adopted by 98 votes.

3.—Tuberculin being a valuable means of diagnosis, the Congress recommends the method followed in Denmark to combat tuberculosis. Negatived by 73 votes against 31.

4.—The International Congress, recognizing that tuberculin is in reality the best means of assuring the diagnosis of animal tuberculosis, and therefore the best means of combating the disease, resolves that the employment of tuberculin ought to be imposed by official regulations in the various States. Negatived by a large majority.

5.—The Sixth International Congress takes note of the attempts which have been made in Denmark with such great foresight and excellent results to combat tuberculosis of cattle by the employment of tuberculin, and invites the Supreme Federal Council of Switzerland to bring under the notice of the different governments the results of its deliberations, and to recommend the general employment of the Danish method everywhere. Negatived by a large majority against 25 votes.

The Congress records its opinion that the various governments ought to prescribe the employment of tuberculin in premises in which the disease has been observed. Adopted by 73 votes against 25.

IV. Vaccination against Black Quarter.

The Veterinary Congress regards the preventive inoculation against black quarter discovered by MM. Arloing, Cornevin and Thomas, as a valuable method of combating the disease, and one which is practicable in countries where compensation is provided for losses sustained through the vaccination.

V. Pneum. Enteritis of the Pig.

1.—Swine fever and swine plague, on account of practical considerations, ought to be inscribed under a common name among the contagious diseases to be combatted by public measures, subject to obligatory declaration and inserted in the bulletin of epizootics separate from swine erysipelas. Adopted by 89 votes against 3.

2.—The struggle against these two contagious diseases ought in each State to be regulated according to the legislation and the local situation.—Adopted by 99 votes against 2.

VI.—Swine Erysipelas.

1.—The Congress, recognizing the value of preventive inoculation in the struggle against swine erysipelas, passes to the order of the day. Negatived by 62 against 45 votes.

2.—Preventive inoculation is an indispensable means in the struggle against swine erysipelas. Adopted by a large majority against 6 votes.

3.—The Congress directs the attention of the various governments to the fact, calls upon them to support inoculation, pecuniarily, to supervise its effects and to settle by means of statistics the value of the various methods. Adopted by 51 votes against 31.

VII.—Immunizing or curative inoculation against rabies.

1.—It is desirable that all those who are occupied with the experimental sciences should interest themselves in the verification of the facts upon which the author bases his important conclusions, and thus assist in bringing preventive inoculation against rabies into practice in the various European States. Adopted by 31 votes against 26.

2.—In view of the expense of the necessary experiments, the assistance of public authorities in the matter is indispensable. Rejected by 27 against 23 votes.

VIII.—*Pleuro-Pneumonia.*

1.—The Sixth International Congress of veterinary medicine considers that it is possible to completely and rapidly arrest the progress of contagious pleuro-pneumonia if the service is organized according to the following principles:

a. Animals attacked with pleuro-pneumonia ought to be permanently excluded from public traffic.

b. When the disease is discovered, it is necessary to slaughter both the animals attacked and those suspected or contaminated.

c. Obligatory control of the traffic in animal food ought to be everywhere organized. Adopted by 62 votes against 2.

2.—Preventive inoculation may be of some service in outbreaks occurring in premises where the stock is frequently changed; owing to special circumstances, there is difficulty in executing the sanitary measures. Adopted by 47 against 28 votes.

IX.—*The flesh of tuberculous animals.*

1.—The flesh of tuberculous animals ought to be submitted to special regulations. Carried unanimously.

2.—When carcasses are condemned under such regulations, the owner ought to be compensated, provided that he has conformed to the sanitary measures. Carried unanimously.

3.—Seizure ought to take place whenever, from the extent and character of the tuberculous lesions, there is reason to suspect that the flesh might be injurious to health. Carried by 89 votes against 8.

4.—The sale of condemned flesh is not to be permitted. Carried unanimously.

a. When the animal is emaciated. Carried unanimously.

b. When it has a bad appearance. Carried by 50 votes against 5.

c. When lesions are present in the muscular system. Carried unanimously.

d. When important lesions are present in several viscera. Carried by 71 votes against 18.

e. The Congress expresses the wish that the various governments ought, as far as possible, to promote the erection of apparatus to sterilize flesh. Carried unanimously.

5.—When the flesh of tuberculous animals is considered fit for human food, it ought, as far as possible, to be sold in special premises and in the sterilized condition, or with an intimation of its character. Adopted by 57 against 35 votes.

6.—The Congress considers that in each country a commission ought to be appointed to determine with precision in what cases the inspectors of public and private slaughterhouses ought to post the entire carcass, or seize the whole or part of it, when tuberculosis is discovered at the autopsy of an animal. Adopted by 80 votes against 8.

7.—The Sixth International Congress, assembled at Berne, calls the attention of the various states officially represented at it, to the necessity of instituting a general system of obligatory inspection of meat. Carried unanimously.

BIBLIOGRAPHY.

TRAITÉ DE THÉRAPEUTIQUE CHIRURGICALE DES ANIMAUX DOMESTIQUES.—(Treatise on Surgical Therapy of the Domestic Animals,) by MM. J. P. Cadiot, Professor, and J. Almy, Adjunct to the School of Alfort. (Asselin & Houzeau, Place de l'Ecole Medicine, Paris.)

The first volume of this important work has just been issued and its contents show well the value of the whole book when it will be completed.

It is divided into three parts. In the first, the authors have studied in a comparatively concise manner the means of restraint, anæsthesia, antiseptic measures, hemostasis, and cauterization or firing as an entrance to operative minor surgery.

In the second, the diseases belonging to all structures in general are considered; inflammation, abscesses, gangrene, ulcers, fistulæ, foreign bodies, traumatic lesions in all their forms, and their complications. The cicatrices, actinomycosis,

botryomycosis, with some contagious diseases such as anthrax, farcy and tuberculosis are considered in the point of view of surgery. Tumors close this second part.

The third treats of the diseases of tissues proper and those of the extremities. Diseases of the skin and of the cellular tissue, those of the muscles, tendons, synovial sacs, aponeurosis, arteries, nerves, etc., are studied with the details that they require.

The articles on anæsthesia, antiseptics, the complications of wounds, the diseases of tendons, nerves, bones and articulations deserve special attention. Affections of the feet are to be the subject of special consideration.

Written without complicated phraseology, the reader will, in studying this work well, without difficulty grasp the most minute points. Bibliographic information found after every chapter. Numerous well-made illustrations are interspersed in the text and aid considerably in the description of the various subjects.

It is a book which is called to take rank among the best classical works and those of the veterinary practitioners. An English translation is announced as being in press, which will soon be offered to English readers.

DIE KRANKHEITEN DES HUNDES UND DEREN BEHANDLUNG.—(Diseases of the Dog and their Treatment).—By J. B. Arnous, Thierarzt. Price, \$1.25; Brocts, \$1.50 Bound. Berlin, Verlag von Richard Schoetz, Luisenstrasse No. 36.

On account of the presence of excellent works upon special pathology and therapeutics of the domestic animals, it appears to be somewhat risky to publish a book upon diseases of the dog.

But in these larger works the diseases of the dog treatment are of secondary consideration, and a quick review is difficult, and for this reason the editor undertook the work.

Diseases which are only of a special scientific interest are omitted, so not to enlarge the book unnecessarily; diseases, however, which are frequently met with and often puzzle the practitioner, are extensively described.

For the preparation of the above mentioned material, the

author thought himself entitled to use the practical experience which he gained during his activity.

JOURNAL OF THE AMERICAN PUBLIC HEALTH ASSOCIATION.

We have received the fourth part of Vol. I of the quarterly series of this excellent publication, issued for the last twenty years by the association. Well arranged, printed with easy reading type on choice paper, and illustrated with plates neatly made up, this volume of nearly 200 pages contains principally a long series of articles of great interest to bacteriologists.

SOCIETY MEETINGS.

KEYSTONE VETERINARY MEDICAL ASSOCIATION.

The meeting of this Association was called to order at their new quarters on the northwest corner of Broad and Filbert Streets, by President J. R. Hart, at 8:00 P. M., Tuesday evening, November 12th, with the following attendance: T. B. Rayner, W. S. Kooker, B. Rayner, J. R. Hart, C. Lintz, F. Bridge, J. T. McAnulby, W. H. Hoskins, and W. L. Rhoads.

Dr. Hoskins, as Chairman of the Legislative Committee, reported that the State Board of Veterinary Medical Examiners would meet at Harrisburg on the 13th for the purpose of organizing, the Governor having made the following appointments: Dr. W. H. Hoskins and C. J. J. Harger, both of Philadelphia, for three years; Drs. J. C. McNeil, of Pittsburgh, and H. Walters, of Wilkesbarre, for two years, and Dr. J. W. Sallade, of Pottsville, for one year.

The question of the Board accepting the diploma of any school as sufficient without an examination by the Board was broached, and very vigorously protested against, as the Board would be thus shirking their duty and evading the law. It was moved and unanimously adopted as the sense of this Association, that all who wish to locate within Pennsylvania to practice veterinary medicine must pass the examination of the Board.

Dr. Hoskins asked for information regarding true hemorrhoids in the horse; he thought the anatomical construction and position would make it impossible, and said he had been unable to find any record of such cases in veterinary literature of the last fourteen years.

This question was spoken upon at some length by Dr. J. B. Rayner, W. S. Kooker, F. Bridge, T. B. Rayner and C. Lintz; all spoke of the hemorrhoidal condition often found, but all agreed that they had never seen true hemorrhoids in our equine friend.

Dr. Kooker mentioned an affection among some horses under his care, they could not be induced to eat, and became very dull when driven, had diarrhœa, otherwise they seemed normal.

Dr. Hoskins mentioned a case of osteoporosis in a pony two-and-a-half years old, said troubles coming when he seemed to be in the best possible health and physical condition, having gained one hundred pounds within a year.

Meeting adjourned to reconvene December 10th.

W. L. RHOADS.

OHIO STATE VETERINARY MEDICAL ASSOCIATION.

The semi-annual meeting of the Ohio State Veterinary Medical Association convened in the parlors of the Gibson House on the evening of Oct. 3, 1895.

There was neither President, 1st or 2d Vice-Presidents, or Treasurer, the Secretary being the only officer of the association that showed up. The many essays promised ended with the promise, as none were read, and in the whole the meeting, although enjoyed socially, was from the point of numbers a failure. Dr. W. H. Gribble proposed that Dr. J. C. Meyer, Jr., act as chairman, which was agreed to by all present.

Dr. Meyers, on taking the chair, expressed his regret at the small number present, especially so when the railroad rates for to-day and to-morrow are only one cent per mile coming and going; he had been a member of the association since its organization, but never before saw so few of the

members at a meeting, and he hoped it was not lack of interest in the profession, but simply due to unavoidable circumstances.

Minutes of the last meeting were read and approved. The bills of the Secretary were duly presented and approved.

The Secretary read a large amount of correspondence—too much to refer to each individually.

The request of Dr. Elliot, of Greenville, for a withdrawal, was read, and the Secretary instructed that the same be granted after the doctor comply with certain laws of the association.

A communication, accompanied with a large amount of printed matter, was received from Miss Cecelia Ritter; asking for the association's condemnation of vivisection, and its signature to a petition asking for its total abolishment.

The association refused its signature, as the members present thought restricted vivisection was a great benefit to the human family. They admitted that the practice was often carried beyond the realms of common sense or science, and that this should be restricted by law. The Secretary was so instructed to inform Miss Ritter.

The remainder of the evening was taken up in a social way, and in the discussion of a few unique and interesting operations. Adjourned at 11 P.M. to meet the following morning at 9 A.M.

The morning meeting was called to order at 9.30 A.M., with Dr. J. C. Meyer, Jr., in the chair.

The following cases were reported by Dr. S. E. Bretz, of Little Sandusky, O.:

I was requested at our annual meeting in 1894 to read a paper on tracheotomy at the following semi-annual meeting. Not being able to meet with the members of this association accounts for the delay of this paper. Instead of describing the operation from a scientific standpoint, and referring to the diseases that might be associated with the operation, I will refer to cases that came in my practice.

PATIENT NO. 1.—Subject was a chestnut mare, ten years

old, due to foal and owned by my father, and was kept in the same barn with my horses.

She was a victim of influenza in April, accompanied with laryngo-pharyngitis. The first day that I noticed her she was dull and dejected, mucous membrane red, legs and ears cold, pulse 120, temperature 104° , weak, staggering gait, cough, sore throat, with great prostration and loss of appetite.

She was placed in a boxstall, well bedded and ventilated, but not drafty, with warm clothing and bandages. Prescribed belladonna, quinine and glycyrrhiza, internally given with syringe every three hours; ammonia liniment to the throat followed by many tail bandages.

The symptoms remained stationary for four days, and the animal was doing fairly well until the fifth day; when I reached the barn my father, in her stall, called to me saying that the mare was choking to death. I rushed to the stall and while the mare was almost suffocated and had fallen to her knees, I thrust my jack-knife into the trachea, about midway between the inferior maxilla and sternum, and relief was instantaneous.

I then ordered my tracheotomy tube from the office, but it was broken on the way, so I applied a twitch to one ear and dissected out a part of two of the rings of the trachea and with strings around the neck I tied and inserted a funnel until I went to the tin-shop and had a tube made to order. The temperature rose to 106° , with all other symptoms increased in severity.

The tube was removed twice a day and cleansed in carbolyzed water until the third day, when the tumefaction became so great around the orifice that the tube would no longer reach the trachea, so the opening was left to itself, other than to be cleansed several times a day with a swab. By this time the mare began to show signs of labor pains. I had an assistant to draw the swollen tissue together across the opening of the trachea so that natural labor pains would be more complete. I then removed the foetus, which was alive and healthy, and did well. The mother made a complete recovery. Later this same mare had two severe attacks

of acute indigestion, and was punctured six times at the first, and seven times at the second, and recovered from both. I then neurotomized her for navicular disease, and at present she has the appearance of a sound and healthy animal.

PATIENT NO. 2.—Subject was a bay mare owned by J. L. Lewis, of Harpster, O.

The attendant came to my office and said the mare had the colic and asked for a colic mixture.

The mare had been pregnant for ten months, so I told the man if one dose did not relieve her he should let me see her. The medicine was given, pain relieved, and mare put to work.

About one month later he came to my office and said the mare was same as before, and as time was due to foal, requested me to call and see her. On my arrival I found that the amniotic fluid had escaped, but there were no visible labor pains, so I proceeded to remove the foetus, which was alive and did well.

I then inserted my hand to remove the placenta, and to my surprise came in contact with a dead foetus much smaller than the other. It was so putrid that the eyes had disappeared, the skin and hair would slip off at the slightest touch, and had a most offensive odor. I removed it, cleansed the womb with a weak solution of carbolic acid, gave a laxative, followed with quinine and morphine.

On my return the next day I found a well marked case of utero-peritonitis, with the following symptoms: small, hard pulse, elevated temperature, loss of appetite, hurried respiration, mouth hot, mucous membrane injected, stamping with hind feet, turning head toward flank, swollen vulva, and a discharge therefrom. The lining membrane of vulva was black and ulcerated, and possessed a most offensive odor, so bad was the smell that I could hardly encourage the attendant to administer the medicine. Gave quinine, morphine and aconite every four hours, alternated with hypo-sulphate soda.

The fæces would collect in the rectum, and the mare was unable to expel them with the aid of injections.

I had a small boy to stand on a box and with his arm well oiled would remove the fæces from a much swollen rectum.

Injected into the womb a solution of carbolic acid and withdrew the fluid and so continued until all odor and dark colored fluid would be removed; this was repeated twice a day. The animal recovered.

Dr. Shaw, of Dayton, reported a case that came under his personal observation, in which a mare had been repeatedly bred to a Clyde stallion with no results. One day she was bred (more for fun than anything else) to a French coach horse, and the same day, again to the Clyde; conception took place, and in time she gave birth to twin colts, showing plainly by shape, color, etc., that one was after the Clyde horse, and one after the coach.

Dr. Gribble reported being called to Centreville to attend a mare in trouble at foaling, and removed (both dead) a mule colt and a horse colt. He was then informed that the mare had been repeatedly bred to a stallion with no success, that one day she was bred to this horse and the same evening a man came along with a jack, and induced the owner of the mare to use him; claiming that often jacks could get in foal mares that stallions failed on; he was used with the above results.

Dr. W. C. Fair, of Cleveland, reported a case which had been written to him about in which the writer claimed that a horse, apparently in the best of health, was driven but a short distance when it became paralyzed behind and died. On post mortem it was found to have but one kidney, and that one enormously enlarged and containing considerable pus.

The following resolution was presented in writing, and on being put to vote, was unanimously carried.

Whereas, The State of Ohio is in danger of being flooded with quacks, empirics and unqualified diplomatized practitioners, who by their inefficiency are a menace to the owners of horses and cattle as well as a detriment to our professional and social standing; be it

Resolved, That we, as an association of graduated veterinary surgeons, recognize the State Board of Examiners. That we appreciate the law passed by the 71st General Assembly of Ohio, May 21st, 1894, to regulate the practice of veterinary medicine and surgery, and we will assist said

board in their endeavors to carry out this law with a view of protecting the public against imposters as well as elevating the standard of our profession and practitioners.

It was duly offered, seconded and declared carried that a committee composed of Drs. J. C. Meyer, Jr., W. Shaw and W. H. Gribble, be empowered to draft amendments to the State law governing the practice of veterinary medicine and present the same at the next annual meeting of the association.

No further business appearing, the association adjourned to meet in Columbus during 1896.

The secretary desires to call the attention of Ohio veterinarians to the fact that the small number present at this meeting is exceedingly discouraging to the few hard workers, especially as what work is done and laws passed are for the benefit of all.

The clamoring of the veterinarians of this State for legislation and the lack of interest and united effort shown in trying to get it forcibly reminds one of the old darkey who had no turkey for Thanksgiving; and he prayed and prayed for some time for the good Lord to send him one, but no turkey came. He one day read, "It may not be my way, it may not be thy way, but each in his own way the Lord will provide." So he then changed his prayer, and prayed that the Lord would send him out to get a turkey. It is needless to say he got one. So with us as veterinary surgeons of Ohio, and especially as members of this association, instead of *praying* for legislation let us by hard work and united effort *get* legislation. If you are now a member of this association, become a worker; show us by your presence that you have a knowledge that this association exists, and that you are a part and parcel of it. If you are not a member, and are qualified to become one, send in your application with the \$5.00 fee and join us. Laws are not passed without some expense, and as you are one to be benefited, let us work together, let us use the law we now have (which is a good one as far as it goes), let us use it as an entering wedge, to be improved upon

by amendments and additions, and by so doing obtain a veterinary law, not only for our own individual interests, but for the benefit of the live stock and live stock owners of one of the best States in the Union.

Let us as graduates be liberal, not claim that our alma maters are infallible, and that we should be exempt from that which we demand of others, but rather let us deny that any man, graduate or no graduate, should be entitled to practice in this great commonwealth unless he has the respect of his fellow men, some knowledge of gentlemanly, practical ethics, and is willing to undergo the examination prescribed by the State law. This will remove from practice that sword of sarcasm, often used by fellow practitioners, that your college was not as good as mine. At the annual meeting to be held in Columbus, let us see every old member present the name of a new applicant, and let us see so many present that the old officers will experience an old-fashioned veterinary revival, to the joy and possibly the proposition of a banquet to all.

WM. H. GRIBBLE, D.V.S., Sec.

ILLINOIS STATE VETERINARY MEDICAL ASSOCIATION.

The 13th annual meeting of this association was held in the Sherman House, Chicago, on November 30 and 31.

The meeting was called to order by the President, M. Wilson, M.R.C.V.S.

On roll call by the Secretary a large number of the members responded to their names.

The President's address was listened to attentively and was pregnant with facts and useful suggestions.

The following papers were then read and liberally discussed:

My first Cæsarean Section in the Cow, by Dr. A. Babb, Springfield, Ill.; Pneumonia, by Dr. S. S. Baker; Some Diseases of the Hock, by Dr. J. Martin, Kankakee; Soundness and Lameness, by Dr. A. G. Alverson; Bovine Tuber-

culosis, by Dr. N. Trumbower; Transmission of Disease, by Dr. A. H. Baker.*

The arguments of these papers by the several practitioners brought out many valuable therapeutic agents.

The following gentlemen became members of the society: Dr. A. A. Pressler (Ct. V. C. '93), Fairbury, Ill.; Dr. A. J. Savage (Vet. Dep't Detroit Mech. College '95), Litchfield, Ill.; Dr. E. S. Fry (Ct. V. C. '94), Naperville, Ill.; Prof. Olof Schwarzkopf (Berlin, Germany, '80), of the McKillip, Vet. C. Chicago.

The annual election resulted in the choice of the following officers:—President, Dr. M. R. Trumbower (our able State veterinarian), Sterling, Ill.; Vice-Pres., Dr. J. L. Tyler, Chebanse, Ill.; Sec'y, Albert Babb (re-elected), Springfield, Ill.; Treas., R. G. Walker, Chicago, Ill.

Censors:—Drs. T. J. Cumming, Neponset, W. J. Martin, Kankakee, and Prof. Joseph Hughes, of the C. V. C.

On motion, Galesburg was fixed on as the site for the spring meeting.

ALBERT BABB, A.B., M.D.C.,
Secretary.

VETERINARY MEDICAL ASSOCIATION OF NEW YORK COUNTY.

The regular meeting of the Veterinary Medical Association of New York County was held on Tuesday evening, December 3d, 1895, at 8:30 o'clock, with the President, Dr. Huidekoper, in the chair.

On roll-call the following members responded to their names, viz.: Drs. Amling, Bieser, Bretherton, C. C. Cattanach, J. J. Cattanach, J. S. Cattanach, J. S. Cattanach, Jr., Dickson, Delaney, Dair, Ellis, Ferster, Farley, Giffen, Gill, Glover, Huidekoper, Hanson, Jackson, Johnson, Knott, Loomes, Lellman, Machan, MacKellar, Neher, O'Shea, Parsons, Ryder, Richards, Sielman and Turner (32).

The minutes of the last meeting were read and approved.

Dr. Gill, chairman of the Board of Censors, reported that

* These will be published in next issue.

the charges against Dr. S. K. Johnson were not made in the regular order according to the by-laws, and the case was dismissed.

The charges against Dr. Robert Finlay were laid over until the next regular meeting for further evidence.

Moved and seconded that the report be accepted. Carried.

Dr. F. W. Turner read a short paper on the American Society for the Prevention of Cruelty to Animals.

A general discussion followed the paper, in which a majority of the members took part.

Judiciary Committee, Dr. O'Shea, chairman, reported progress.

Certificates, Dr. Turner, chairman, reported that the certificates were read and would be signed and delivered at the next regular meeting.

Moved and seconded that each member's dues and assessments be paid before he receives the certificate of the Association. Carried.

No new members. No applications for membership.

This being the annual meeting the election of officers for the ensuing year was next in order.

Moved and seconded that a recess of fifteen minutes be taken. Carried.

Nominations for President being next in order the following were made, viz: Drs. Huidekoper, Hanson and Giffen.

Moved and seconded that the nominations close. Carried.

For Vice-President Dr. Thomas Giffen was nominated.

Moved and seconded that the nominations close. Carried.

For Secretary the following nominations were made, viz: Drs. Ellis, C. C. Cattanach, Ryder and Hanson.

Moved and seconded that the nominations close. Carried.

For Treasurer the following were nominated, viz: Drs. C. C. Cattanach, Neher and Parsons.

Moved and seconded that the nominations close. Carried.

The election now took place with the following result.

President, Dr. R. S. Huidekoper; Vice-President, Dr. Thomas Giffen; Secretary, Dr. R. W. Ellis; Treasurer, Dr. C. C. Cattanach.

The President then addressed the members and thanked them for the honor bestowed upon him, after which the new officers were introduced to the members, each in turn making a short address.

Moved and seconded, that an Auditing Committee be appointed to examine the Treasurer's report. Carried.

The President appointed as such committee Drs. Hanson and J. S. Cattanach.

After examining the report they reported it correct. The report showed a balance in the treasury of \$13.18.

Moved and seconded that a vote of thanks be extended to Dr. Ryder, the retiring Secretary. Carried.

Moved and seconded that the meeting adjourn. Carried.

J. E. RYDER, D.V.S.,
Secretary.

WISCONSIN SOCIETY OF VETERINARY GRADUATES.

The annual meeting of the Wisconsin Society of Veterinary Graduates will be held in Madison, Wednesday, February 5th, 1896, at 1:30 P. M.

PROGRAMME.

Shoeing.—Dr. E. L. Morgenroth.

Scientific Breeding.—J. R. Kelso.

Equine Relapsing Fever.—T. W. Watson.

Veterinary Meat Inspection by the State and its Necessity.—G. Ed. Leech.

Professional Ethics.—J. P. Laws.

The meeting of the State Agricultural Society will be held the same week, and excursion rates will be given by the railroad companies.

You are cordially invited to be present at this meeting.

J. P. LAWS, *Pres.*,
309 E. Main St., Madison, Wis.

W. G. CLARK, *Sec'y*,
Beaver Dam, Wis.

ONTARIO VETERINARY COLLEGE.

The Ontario Veterinary Medical Society, in connection with the Ontario Veterinary College, has held several meet-

ings during this session and a number of interesting and instructive papers have been presented.

The officers are :

Andrew Smith, F.R.C.V.S., Pres.; H. R. Ryder, Sec.; F. V. Simpson, Ass't Sec.; G. R. C. Marriam, Treas.; R. F. Hoadley, Librarian.

H. R. RYDER, Sec.

NEWS AND ITEMS.

HORSESHOE PAD.—Another pad has been invented and patented by Michael Hallanan, of New York City. It has a yielding block at the heel provided with side extensions which terminate rearwardly of the nail holes, the extensions and the shoe having squared meeting ends that are each rabbeted and lap each other. The pads are designed for use with shoes of different sizes and shapes to prevent balling of snow, picking up nails or stones, etc., etc.

TUBERCULOSIS FROM CATTLE TO THEIR OWNERS.—The *Boston Globe* published lately a long article on an outbreak of tuberculosis in Ashfield, in which a number of cows were killed as affected with the disease and in which from all circumstances it seems that the death of several persons can be traced to the use of the products of the cows composing the herd. A number of pigs are also reported as having died from tuberculosis by the same way of infection.

TUBERCULOSIS IN VERMONT.—The State cattle commissioner, with Dr. F. A. Rich, has inspected cattle in the town of Randolph, and out of 153 head tested with tuberculin they killed seven. In previous test they killed 31 out of 57.

HOW WE INTEND TO CHECK SUBSTITUTION OF DRUGS.—Owing to the fact that substitution of drugs is practiced to a great extent, we earnestly request our readers to assist us in reporting to us all cases in which they may have been the victims of this criminal offense, giving the name and address of imposters, also all particulars to substantiate their statement, such as sworn affidavit, etc.

We will expose in our columns the names of fraudulent dealers on receipt of satisfactory evidence.

All our readers will admit that a doctor who prescribes a certain remedy expects that his prescription shall be filled accordingly. A druggist has no right whatever to use his own judgment in the matter, otherwise he places the reputation of the physician as well as the life of his patient in jeopardy.

Feeling that all doctors, honest druggists, and manufacturers of legitimate preparations will be benefited by our action in this matter, we solicit their assistance.

The above notice must be considered as a warning against druggists who believe that they are at liberty to substitute drugs.

STOCK KILLED BY LIGHTNING.—At a meeting of the Yorkshire Veterinary Medical Society, England, recently, at Leeds, Mr. S. Wharam, Leeds, read a paper on "The Effect of Lightning upon Animals." He pointed out that electricity appeared to act fatally by producing a violent shock to the brain and nervous system. Generally there was no sense of pain, and the animal fell at once into a state of unconsciousness. As to *post mortem* appearances, he said that the suddenness of death was sometimes such that there was nothing to indicate the mode of death. But, generally speaking, there were external singeing or blackening of hair, and marks of contusion and laceration about the spot where the electric current had entered or passed out. It was formerly supposed that the blood was never coagulated after death by lightning, and that the carcass did not become rigid, but these statements were not in accordance with observed facts. Discussing preventive measures, Mr. Wharam said that in a large breeding establishment in Leeds the following system was adopted in the park:—Each large tree had a conductor some distance above the highest point, and carried into a tank of water at the base, the tree being railed round. During the twenty-three years that that system was in vogue a large and valuable herd was out in the park, and, although in an exposed position, not a single animal was struck by lightning.

CONTAGIOUS ABORTION.—A. O. Dinsmoer, of Mower Co., Minn., writes to the *Breeders' Gazette* to state that in 1894 he lost more than two-thirds of his large calf crop by abortion. Investigation for cause gave the history of a cow being brought to his bull for service which had a short time before "slunk" her calf. He argued that the bull became infected from that cow, as cows served by that bull previous to cohabitation with the suspected cow did not abort. He thereupon changed his bull, and his cows calved at the normal term in 1895, with but one exception.

PLEURO-PNEUMONIA IN AUSTRALIA.—According to the American veterinary inspectors stationed at British ports, Australian cattle have been shipped to England and showed six cases of pleuro-pneumonia. Why don't England inaugurate the American way to dispose of that disease.

GOLDEN ROD.—Dr. Rusby, Prof. of Botany at the College of Pharmacy and American Veterinary College, endorses the opinion of Dr. C. F. Scott, State Veterinarian of Wisconsin, as to the poisonous qualities of Golden Rod. Horses ought not be allowed to eat it.

ANTI-TOXINE IN THE TREATMENT OF LOCKJAW.—While authorities are willing to grant only anti-tòxine prophylactic properties in tetanus, there are others who claim that it is beneficial in the treatment of at least sub-acute or chronic cases. While we do not know of any authentic cases well recorded, and in the presence of the fact that success has been claimed by some, it is evident that anti-toxine ought to be tried and the results made public.

BACK NUMBERS WANTED.

Dr. A. W. Bitting, of Purdue University, Lafayette, Indiana, offers a good premium for the following:

Vol. I; No. 12 of Vol. V; No. 12 of Vol. XI; Vols. XIV and XV.

AMERICAN VETERINARY REVIEW.

FEBRUARY, 1896.

EDITORIAL.

THE ASSOCIATION OF FACULTIES OF THE VETERINARY COLLEGES OF NORTH AMERICA—A LAST WORD.—When last summer, through unforeseen private circumstances, I found myself obliged to be absent from the meeting of the United States Veterinary Medical Association, and from that of the Association of Faculties of the Veterinary Colleges of North America, I felt that it was my duty to present, through the chairman of the association, the protest which he so kindly took charge of—a friendly act—for which I thank him.

This protest I wrote as the result of long and careful consideration, and with the best intentions and motives. I addressed it to him, as I had his letters as chairman of the committee, and I had a number of copies printed for distribution, for no other object than to facilitate the understanding and discussion of the subject before the meeting, and by the association.

To have misconstrued the idea and the object of my doings in supposing that I was trying to break up the association, prevent its work, etc., is something that I cannot understand, as I cannot, even now, after repeated readings of the protest, find the slightest expression of such meaning. That I have insinuated that some honored gentlemen of our profession had assumed a title to which they had no claim, by representing themselves as official delegates of veterinary institutions, is an interpretation which does me great injustice, and which careful reading of the protest will reveal.

What I have asked might have been ignored—refused, as it were. It would have been better if the question had been considered in a cool manner, with careful examination of the object intended, rather than to have it treated as it has been. If such had been the case, I cannot yet, to-day, help thinking that it would have been better for all.

I have not given in my use of the words *legal* and *unconstitutional*, their strict meaning, but that which I believe is understood when applied in connection with the propriety of complying with the laws that regulate all constitutions of every well-organized body of men.

After all, my object was simply to ask the Association of Faculties to be so perfect in its organization that not the slightest flaw could be found in years to come. I had for the future of that association a perspective so large, and so great an idea of its influence and of its value, that I thought something was wanting, was deficient, and I took the first opportunity to cry "Stop"—as I did.

Have I made a mistake? If so, I am prepared to apologize, but yet the proofs of my error have not been produced.

The minutes of the meeting of the association will settle the question, and would have settled it long ago, had they been made public, or had I had an opportunity to see them.

The question resolves itself to this: If the minutes record that *official delegation instruments were presented by each and every delegate, and are placed on file with the archives of the association where they can be seen*, I have made an error, a great error, and, as I said, I shall apologize, and regret my mistake. If, on the contrary, such official credentials are not in existence, I cannot but repeat that which I have asked before.

A reconsideration of the work done could not have injured nor broken the vitality and strength of the association. On the contrary, it cannot help but strengthen it. Its work on behalf of veterinary education can be but more influential. Its prospective callings—in the watching of those steps which will elevate our profession—are so great, that, to us, too much care cannot be taken to preserve it and to carry it through a long life of usefulness.

And these were my motives for writing the protest; and the recent journalistic misconstructions and misrepresentations, born of a desire to self-lionize the writer, who, lulled by self-adulation into a feeling of censorship of the acts and utterances of the whole profession of veterinary medicine of America, cannot but be open to the suspicion of being malicious, and, as such, contemptible. And having made the above explanation to the profession at large, a few of whom may have been misled by the attacks made on me, I leave the whole matter (*once for all*), to the calm judgment of unprejudiced minds.

A. L.

ANTITOXIN IN TETANUS.—We called the attention of our readers, in the last issue of the REVIEW, to the advantages that veterinarians could derive by the use of antitoxin in the treatment of tetanus, and if the results which have been recorded in medical journals could be obtained in veterinary, as it has in human medicine, it would be certain that a very valuable addition to our therapeutics would be obtained.

We had called upon some of our colleagues, who, we understood, had used antitoxin, and, though all did not answer our request, we have received from Dr. Jobson and from Dr. Lamkin, reports of most interesting value. These are not only *tests* of the value of antitoxin, they are proofs of the advantages that can be obtained; they show that it belongs to the veterinarians not to ignore this form of treatment; in fact, they are but the promoters of a positive indication that not only antitoxine cannot be ignored, but, on the contrary, ought to be used immediately—from the first indication of the disease, at the first symptoms. In point of fact, this is the opinion of Prof. E. Nocard, who, we believe, principally objects to consider antitoxin as curative in general practice, because it is generally too late when the veterinarian is called, the organism being so entirely saturated with the bacilli of the disease that no effect can be looked for from the antitoxin itself.

In relation to this subject of the treatment of tetanus with sero-therapy, we will publish later the results which were

obtained by a French veterinarian in using the serum of a horse affected with tetanus for the treatment of other tetanic patients, with wonderful results.

VETERINARY PRIZE.—In the January number of the REVIEW we were allowed to present our readers with the report of the Chairman of the Prize Committee, Dr. Tait Butler, which was read in the meeting at Des Moines, last September, in relation to the prize which has for some time been offered by the United States Veterinary Medical Association, and having courteously accepted additions to its value from the editors of the veterinary journals of this country.

The report was very interesting and presented some valuable, just and severe criticisms upon the whole subject; explained the reasons why no papers could reasonably be expected; related the circumstances by which some injustices have been (perhaps unwittingly) committed, and concluded by asking that said committee be discharged, and the subject of a prize from the association be dropped.

We are not aware of the action taken by the association in reference to the matter, but we hope that the conclusions of Dr. Butler were not accepted, but that, on the contrary, the national body has, in its wisdom, adopted measures to encourage the competition and keep up its offer of a prize for the best paper presented. As far as we are concerned we hope that the association will continue to allow us to add to the prize the offer that we have already made, and, should we not be permitted to do so, we will—and we do now—offer a special prize, of the value stated by us, for the best paper that will be sent to us on any subject connected with veterinary medicine, the selection of said paper to be made by a committee of three, chosen from the members of the profession in this country.

DR. O. SCHWARZKOPF.—We have received information to the effect that Dr. O. Schwarzkopf has resigned his position with the McKillip College, of Chicago, on account of personal difficulties. From a letter received relating to this serious event, we extract the following:

“ I feel that this abrupt removal will reflect on Dr. Schwarzkopf, whom we—the faculty—have come to respect as a true, scientific gentleman, a man eminently qualified to guide such an institution. In justification of his meritorious work, I address you, as one of the recognized leaders of the veterinary profession in America, to show you that Dr. Schwarzkopf has won, and yet maintains, the most profound respect of all the members of the faculty, as well as the students of the college.”

Dr. Schwarzkopf has a right to feel proud of such appreciation from his ex-colleagues.

PENNSYLVANIA STATE VETERINARIAN.—After a long delay, during which the veterinary societies of the State pluckily pursued the appointing power, Governor Hastings has announced the appointment of Prof. Leonard Pearson, of the Veterinary Department of the University of Pennsylvania, and one of the editors of the *Veterinary Magazine*, to fill the position of State Veterinarian. This appointment is well merited by the special attainments of the recipient, and completes the State Veterinary Sanitary Board, enabling it to deal more thoroughly with contagious diseases of animals, and to better control the milk and meat industries to the end of better guarding the health of the people deriving sustenance therefrom. The salary of the position is twenty-five hundred dollars per year.

BUFFALO SELECTED.—The *Comitia Minora* of the United States Veterinary Medical Association has decided to hold the annual meeting for 1896 at Buffalo, which has never before been honored by the presence of the national body. Many other cities put forward most excellent claims for the convention, but Buffalo outvoted them and carried off the prize. Certainly there are many advantages in and around that city which will make a large meeting of veterinarians very interesting, and the *personnel* of the Buffalonians insures a hearty welcome to visitors from everywhere. The city is a vast centre of live stock interests, and the point is accessible from all quarters. We bespeak for the meeting of this year a large attendance and much interest.

ORIGINAL ARTICLES.

VETERINARY OPHTHALMOLOGY.

By J. A. COUTURE, V.S., Quebec.

Specially Written for the AMERICAN VETERINARY REVIEW.

ULCERATION OF THE CORNEA; FALL OF THE CRYSTALLINE LENS.

This disease is very common in dogs and men, and those veterinarians who have a little dog practice have often met it either on old subjects or as a complication of distemper. But, if I am not mistaken, the displacement of the crystalline lens and its falling out of the eye is a very rare occurrence in dogs, though it is not of uncommon occurrence in man.

In order to better understand the case it may be useful to expose in a few lines the causes, symptoms and termination of the disease.

Ulceration of the cornea is never of an inflammatory nature; on the contrary, it is the consequence of defective nutrition bringing a *passive processus*, called by some *degeneration*, but more properly described by Trasbot under the title of *necrobiosis*. This Alfort professor has so well described both these passive processes (*necrobiosis*), and the ulceration of the cornea, that the readers of the REVIEW will forgive me if I quote him largely in this article.

Necrobiosis is the term employed by Virchow to designate the *progressive mortification, followed by gradual destruction, without putrefaction, of anatomical elements situated in the midst of living tissue*. It differs from necrosis. Necrosis is characterized by gangrene of all the elements of the parts affected; *necrobiosis* is characterized by death and gradual disintegration of the affected part.

Necrobiosis occurs physiologically in secretion of sebaceous glands, secretion of mammary glands, some mucous secretions; it occurs pathologically in all *fatty degenerations and fatty infiltrations*, it occurs also in the disintegration and absorption of blood-clots when hæmorrhage has taken place in the tissues,

or when there is an obstruction to the capillary circulation. It occurs in what is called mucous infiltration, colloid infiltration, amyloid infiltration.

Ulceration of the cornea is the consequence of colloid necrobiosis of the membrane. It is caused by general debility; occurs specially in old dogs weakened by misery, diseases, old age; in young dogs as a result of long and protracted distemper or any other cause of general debility.

At the outset there is no sign whatever of irritation; the eye keeps open, the cornea is transparent except at a small spot in the centre generally, or near the centre, but not always, as is thought by the above named writer, and as my case will prove. The non-transparent part of the membrane appears as a small speck of a milky color and slightly bulging out. Later on the affected part softens, colloid degeneration takes place, it falls off and leaves in its place a small cavity, nearly circular, surrounded by a grayish, white zone. Vision is not affected yet.

The cavity grows larger, more or less rapidly, according to the conditions of existence, until half or two-thirds of the thickness of the cornea has been invaded. At this period the eye may not be painful and the eyesight not much impaired.

Then, should the causes continue to exist, and the ulceration not attended to properly, it keeps on growing larger and deeper until the membrane is perforated through; the membrane of Descemet shows itself into the opening in the shape of a small, round hernia. From this period inflammation sets in, affecting first the membrane of Descemet and the cornea afterward. In the mildest cases this inflammatory reaction may bring on cicatrization of the ulcer. In the worst cases the membrane of Descemet, being exposed, breaks; the aqueous humor flows out, and the inflammatory process invades the serous cavity and terminates in total loss of the eye. In other cases again, the ulceration is so large that the crystalline lens, not being kept in place, falls out.

Here is a case of this kind: The patient is a very old dog—sixteen years old, deaf and almost blind, suffering for a long time from general debility, brought on by chronic gastro-en-

teritis, confinement in rather an obscure place, want of exercise and old age. I was called to him at the end of December last, and was informed that he was suffering from diarrhœa for many days. In making my clinical examination, I noticed that both eyes were sore, but not being called to attend to these organs I did not examine them carefully. Proper treatment for chronic gastro-enteritis was prescribed; the patient gradually got better and at the end of March I was informed by the owner that he was as well as he could be, considering his extreme old age.

The 11th of September last the owner called to get some more medicine for the dog. After a few minutes of conversation he took out of his portfolio a small package wrapped in paper, and showing a small, round, whitish object, said it fell out of the dog's eye a few weeks previously.

Surely it was the crystalline lens. It is quite easy to recount the case: My patient, weakened by disease and old age, etc., has had an ulceration of the cornea. Every circumstance being favorable to the progress of the disease, it finally caused perforation of the membrane and fall of the lens.

I saw the dog the next day and examined his eyes as well as I could without the aid of any instrument and with the diffused light. Opposite the superior line of the iris of the perforated eye, the cornea presents a projection the size of a pea, and which is formed of the membrane of Descemet forced out of the opening of the cornea by the new-formed tissues. The cornea is dull, greyish-white; though the eye is somewhat atrophied, it is more convex than usually. The other eye presents near its centre a cavity of about one-quarter each diameter, which has not yet perforated the cornea. Both eyes are suffering from purulent conjunctivitis. The patient is destroyed the next day with chloroform.

SPRATTS' DOG BISCUITS.—We have received as a compliment from this well-known concern, a pamphlet, referring to the use of this mode of feeding for dogs, which well deserves reading. It is sent gratis to any applicant.

RABIES IN CATTLE.

THE SO-CALLED HYDROPHOBIA IN CATTLE.

By T. ZUCKER, Student at the A. V. C., with permission of A. T. Peters, D.V.M.,
University of Nebraska.

A Paper read before the Medical Association of the A. V. C.

During my sojourn in the West this summer I chanced to come across a very interesting disease affecting the bovine race. Not only was it interesting, but perhaps mysterious and baffling as to its correct diagnosis, as it presented symptoms almost identical with several other of the nervous affections; but I refer especially to that of rabies, it having been my good fortune to carry on a series of experiments with rabies in cattle, and several other of the domesticated animals, at the experiment station of Nebraska, under the supervision of Dr. Peters, thereby giving me an opportunity to see the simile of symptoms between the two affections.

This so-called hydrophobia was quite prevalent, from reports received from different sections of the State, and the symptoms given in these reports corresponded exactly with those of the two cases which came under my observation at the time. I will state here that the weather was exceptionally hot and dry at this period, and whether this will enlighten us as to the etiology or not, we will see later on.

I will demonstrate to you a case of true rabies in the cow; this will include a history of the dog that bit the animal, also the animal inoculated from said cow for the verification of diagnosis.

On April 12, 1895, a female bull-dog was brought to the station, suspected with being rabid, and was confined in an iron cage.

History.—She had one pup which she would not allow to suckle her, and would even snap it or any other animal that came in her way. Had bitten a cow, several horses, and many dogs, most of the latter were destroyed by the owners, and officers of the law.

The bitch after being confined began to act so ferocious,

biting and tearing at the bars, even going so far as to break her teeth, and lacerate the tongue and mouth in general. The cage not being safe with such severe attacks, we deemed it best to destroy her, which I did by placing some cyanide of potassium on a cornstalk, and allowed her to bite and lick it.

Post Mortem.—Her stomach contained nothing but a bunch of grass and hay with a few splinters of wood intermixed. She had only one kidney, which was of enormous size, all other organs apparently normal.

On April 13, 1895, we received the cow from Mr. G——, which this dog had bitten. Thoroughbred Jersey, two years old, fresh two weeks, well nourished, and giving a good supply of milk. Her calf was taken from her and she was placed in a pasture containing a thin crop of alfalfa.

History.—The owner saw this dog bite her on the nose, which was a very slight laceration and responded readily to simple local treatment. She acted rational up to April 16, 1895, when she refused food and drink. On April 17th, she acted strangely, following the man when he brought the horses to pasture; would rub up against him and lick his clothing. The cow previous to these symptoms was very docile. She used to suck herself, so we placed her under restrictions. We kept her in this pasture until Thursday, April 25, 1895, when she began to get vicious and made such a noise that we placed her in a special stone stall in the hospital.

From now on she began to get worse, having regular fits of spasms, eyes bulging, frequent attempts at urination, which would come in little squirts at first, constipation, but later the fæces were watery and flowed involuntarily. When she bellows she drops down suddenly, sometimes her head going under her body—thus we had to pull it from under her to prevent suffocation. She takes some food, chews it for a while and drops it out of her mouth again. Slobbers considerably while eating. If you approach her suddenly she becomes very much agitated. Her bellowing is unlike a cow in health, but prolonged and penetrating. Tried to take her temperature, but the rectum is continually filled with fæces, and then she falls so often it isn't safe to be with her. Pupils

well dilated, eyes amaurotic, ears always on the alert to catch a sound, if she hears a dog she generally has a bellowing fit.

April 26th, she is very violent, having these awful spasms every few minutes, gives a few shrill bellows then drops, powerless, eyes almost forced out of their sockets. She makes forced attempts to drink, running her nose deep into the pail, making that sound as if swallowing, but upon examination the quantity of water is not diminished. After these unsuccessful attempts she upsets the bucket. When attempting to eat she would generally take her bedding, roll it around in her mouth, with a profuse flow of saliva. When suddenly approaching her she would draw back, then make a lunge and drop in a spasm, and if you would come up behind her she would kick aimlessly at you. She will lick anything you place before her, will also pick up foreign substances and chew them.

April 27th, very much weaker, her spasms last longer and she is less capable of rising after she drops down.

April 28th, dropped at 5 A. M.; unable to drink, although she makes great efforts to do so; she raises her head with difficulty, respiration difficult, eyes glaring, salivation increased, very emaciated, bellowing less, and more labored, unconscious to the surroundings.

April 29th, cow very much debilitated, was given feed at 6 A. M., but went into severe paroxysms in attempting to eat, dyspnœa well marked, unable to rise, in fact was down for two days. Death took place on the evening of this date—thus she lived without food for seven days.

Post Mortem.—No tympanitis, slight peritonitis; the rumen and reticulum were filled with grass and straw in a putrefied condition; the mucosa very black, omasum as hard as a rock, was thoroughly impacted; abomasum contained small quantity of food in partially digested condition. Liver very hard and brittle to touch, gall bladder greatly distended, bile being of a thick stringy consistency; spleen about normal; kidneys apparently normal; bladder greatly distended with a light colored urine; lungs healthy, except a slight congestion from lying down. The blood in general was very dark and coagulated quite firmly. The larynx slightly congested, prob-

ably from bellowing, and at the isthmus of fauces there was a cud of straw which she was unable to swallow on account of paralysis. The pia-mater was highly congested in some parts; the dura-mater and arachnoid apparently normal. Quite a flow of fluid from the ventricles upon section, although I could not consider it more than normal. The brain tissue proper was soft and flabby, the right lobe of the cerebrum anteriorly was very much atrophied.

I received word through responsible parties that one of the horses bitten had also gone rabid, and was destroyed.

Now, to further prove the correctness of our diagnosis we made an inoculation test. Made a cold infusion of a portion of the medulla and cervical portion of cord, and two c.c. of this was injected in the axillary region subcutaneously of a healthy dog. Suffice it to say he died from a typical case of rabies thirty days after injection.

Now that I have demonstrated an indisputable case of rabies, it is plainly seen that the word hydrophobia, which means dread of water, is misleading and erroneous, as it reveals nothing to us regarding the true symptoms of rabies, for contrary conditions are noted in affected animals. They make forced efforts to drink, but on account of the paralysis of the pharynx and œsophagus they are disappointed in their attempts, thus they become frenzied and annihilate the bucket to get it out of their sight, so as not to be harassed by its presence.

Let us continue by the discussion of two of those mysterious cases.

August 26th, 1895, was called ten miles out of town to see a cow which the farmer said had hydrophobia. The cow was some distance from the house, in a pasture, through which ran a small brook, which depended on the rain for its supply. She was tied to a tree.

History. — Half Jersey, about five years old (no calf); first began to look sick on Saturday, August 24th, 1895; in fact he milked her this morning; in the evening she was absolutely dry, and was acting strangely, running at the heifer, and that same day Mr. H. and neighbor went down to catch her, and she made them take refuge in a tree.

Observation: When I saw her she was in poor condition, standing as if gazing at some distant object; but she suddenly awoke, as it were, and made a lunge at us. I placed a bucket of water in front of her, but it made her rave, and she threw it twenty feet from her; gave her a second pail, and she repeated the act.

Would pick up foreign substances and chew them. Salivation well marked, spasmodic squirts of urine in small quantity, involuntary flow of watery fæces, œstrum well marked by mucus discharge, pupils dilated, eyes bulging, ears pointed as if listening, she would have spasms and fall down, would buck and tear the ground where the water spilled.

Very emaciated, perfectly dry, would give those piercing bellows, upon approach of a dog she would go frantic. There was a constant shivering of the muscles of the head and neck, also anterior extremities and an amaurotic condition of the eyes, which would give no reaction when touched with the finger, would also kick out aimlessly.

There was no history of mad dog, but as the cow is in the pasture permanently throughout the summer, and is seen only when milked, this statement cannot be verified. She received other food beside the pasture grass.

I shot her on the spot, and made but a very superficial microscopical examination, which was negative as regards lesions.

The blood was dark, but upon striking the air readily oxidized, and was a light arterial color and foamy.

In going to the next case I will simply state that she was a thoroughbred Jersey, about three years old (no calf), in good condition, giving good supply of milk; the history and symptoms were almost identical with the above case, so there is no need of repeating same. No mad dog in this case.

The only difference was, she was loose in a yard, and had broken her horns, and cut and bruised her face and body; she also acted the same towards a bucket of water. Blood in exactly the same condition.

THE TRANSMISSION OF DISEASE.

BY DR. A. H. BAKER, Chicago, Ill.

A Paper read before the Illinois State Veterinary Medical Association.

The consideration of this subject launches us into the complex and hypothetical field of heredity, that to discuss in all its features would take too much of the time of a gathering of busy veterinarians who seem in many cases to be loth to devote more than a few hours twice a year to the discussion of topics of interest to the profession; so, after briefly stating the more generally accepted modern theories of heredity, I will present for your consideration a few points on the transmission of disease from parent to offspring.

The fundamental law of heredity is that like begets like, or at least tends to beget like; but, using the language of believers in evolution, the doctrine of which is now very generally accepted by the scientific world, many deviations and exceptions occur, and may be attributed to the influences of environment, whether they can be discerned or not, and through these new types may be formed, old ones lost, desirable peculiarities perpetuated and improved, and, on the other hand, weaknesses amounting in many cases to actual disease exaggerated by proper or improper mating of breeding-stock.

The natural tendency in nature is toward an equilibrium, an evening up of advantages and disadvantages; but if the mating occurs between animals possessing the same strong peculiarity, the offspring will inherit that peculiarity in an exaggerated degree. If the mating occurs with one in which that peculiarity is wanting it will be diminished one-half in the offspring, and if kept up through several generations it will become obliterated.

The most common peculiarities that we see transmitted are anatomical structure and outline, size, color, intelligence, disposition, appetite, speed, strength and endurance. For illustrations of the transmission of these peculiarities I will refer you to the constant development of the sexual organs, the anatomical outlines of the thoroughbred and broncho, the

size of the draft horse and Shetland pony, the constant color and markings of the Hereford cattle, the intelligence of some breeds as compared to the stupidity of others, the docility of some families as compared to the irritability and viciousness, amount in some to actual ferocity, of others. Gluttony and daintiness are family characteristics; strength, endurance and speed are well known hereditary propensities; speed in particular is one of the best illustrations of the perpetuation and exaggeration of a family trait by judicious mating we have.

The American trotter has become a distinct breed of horses by long-continued judicious matings, and by careful education of the naturally acquired gifts. The healthy embryo develops into a normal foetus and after birth grows up to be a strong specimen of the type, but we believe that many slight variations in the embryonal protoplasmic structure occur that prove later in life to be the origin of many diseases. They may require exciting causes to make them develop, but the seeds of them were in the ovum from the time of its impregnation. This hypothesis enables us to account for many diseases otherwise obscure in their origin, and the difference in receptivity of infectious diseases in different families and individuals. Some breeds take them in a most virulent form, while others enjoy an almost natural immunity.

All variations from the normal type are equally as transmissible as the perfect ones, but variations developing after birth are far less so than the congenital ones. Those existing in the adult, due to environment, are transmissible, but far less so than inherited ones. The theory of the embryonal origin of disease was practically applied to tumors by Couheim, especially the cancers and the teratomata, and his views are quite generally accepted to-day.

The following diseases may be mentioned as being due in many, if not most, cases to heredity, the seeds of them in the form of variations from the normal protoplasmic structure exist, and only require some stimulus to act as the exciting cause to produce them. The application of this exciting cause will produce the disease if the predisposition exist, but will not produce it if it does not exist. It may be delayed

indefinitely, even to old age, or by atonism (interrupted heredity), it may skip over one or more generations to reappear in subsequent ones, and in some cases, through the introduction of new, strong blood, the predisposition may die out.

Tuberculosis; rheumatism; some of the neuroses—epilepsy, the dummy, chorea, heaves, asthma, roaring and locomotor ataxia; cancer; ossific diathesis, as seen in bone spavin, ring-bone and sidebone; laminitis; naviculathritis; hæmophilia (the hæmorrhagic diathesis); the bursal enlargements—thoroughpin, bog spavin and windgalls, curb, obscure bone diseases—rachitis and interstitial absorption; anatomical malformations, as tailless dogs and cats, imperforate anus and ear, defective hearing and sight.

The practical lesson to be learned from this subject is to discourage the use of unsound animals in the stud, especially stallions, for they undoubtedly transmit diseases oftener than mares; but we should not belittle the value of the pedigree on the maternal side. We should discourage the permission of unsound animals to compete for prizes at stock shows.

REPORT OF THE COMMITTEE ON DISEASE.

BY M. R. TRUMBOWER, Chairman.

Read before the United States Veterinary Medical Association.

(Continued from page 622).

MICHIGAN.

H. H. Hinds, President of the Live Stock Sanitary Commission of Stanton, writes:

“We can make no estimate as to percentage of tuberculous cattle in this State. We have tested a good many cattle with tuberculin since January 1st last, which have resulted in about twenty reactions, and a post mortem in each case disclosed the lesions of tuberculosis.”

From the 5th Biennial Report of Michigan, I quote the following:

“*Glanders.*—That glanders and farcy will continue to exist among the horses of the State for an indefinite period in

the future is probably true; but it is equally true that this commission has been able to largely drive these diseases from the agricultural districts of the State to the new portions of our rural districts and the slum stables of our towns and cities. When the commission commenced its attack on this disease it was found to exist on many fine farms in the older or southern portions of the State, and in liveries and private stables within the cities and villages. Not a year then passed but that cases of death from this loathsome disease among the human family were called to our attention. Now the situation is entirely changed. Whole congressional districts seem to be exempt from it. The cases are simple and isolated. Now we find less cases in a year than we formerly found in a school district, village or livery stable. So far as we are informed, no human being within this State has died from this incurable malady during the last two years. Our plan of dealing with all horses pronounced affected with glanders by competent authority, is immediate destruction. The previous condition, record, value or ownership of the animal cuts no figure. Immediate destruction is inevitable. During 1893-94 forty-seven animals were condemned for being affected with glanders.

“Actinomycosis.”—The disease appears to be in some manner communicable, but we are unable to exactly determine how. We have observed experiments where it appeared impossible to communicate it to other cattle, either by association or inoculation. In fact, in all the cases in our observation, in attempts to artificially communicate it, the experiments have produced negative results. We also have observed that a large percentage of cases, when handled in the early stages, yield to treatment both with the knife and by prescriptions. Also we have noted many recoveries without treatment.

“Hog Cholera and Swine Plague.”—There has been a large number of outbreaks of what is termed ‘hog cholera’ in different sections of the State during the past two years, and farmers have sustained large losses from the disease, amounting in the aggregate to many thousand dollars. The State has also sustained a heavy loss. The disease broke out in a herd of the Eastern Michigan Asylum in August, 1894, and

out of 174 animals, 102 died. But few of the outbreaks in the State have been reported to the Commission, and but little notice taken of the destructive contagion by local boards of health; hence, where the disease has once started in a locality, its spread has been rapid and the losses correspondingly large."

MINNESOTA.

Dr. M. H. Reynolds, of St. Anthony's Park, a member of this committee, will present a special report on "Improved Medication."

MISSOURI.

Dr. John S. Meyer, of St. Joseph, submits the following report:

"We have had a very heavy outbreak of hog cholera and swine plague in Northwest Missouri for the last three months. Also one very violent outbreak of anthrax in swine the first of July, 1895. These are the only outbreaks I have had my attention called to of contagious diseases. We have some actinomycosis, tuberculosis and glanders here, but nothing of importance. In the treatment of swine plague and hog cholera, U. S. Swine Plague and Hog Cholera (Bulletin No. 24) Treatment was used. Results not very satisfactory."

I take pleasure in introducing a very interesting report from Dr. Junius H. Wattles, of Kansas City. I have many reports of this type of disease from various veterinarians in several States, but this being so concise in description, I will choose it for the purpose of covering them all:

"Kansas City was visited by an endemic, beginning about the middle of March this year, and lasting until the latter part of May, affecting horses of all breeds and ages, of a catarrhal nature, and rarely fatal. Not less than twenty-five per cent. of all the horses in the city were affected.

"In stables containing fifty horses, five, ten, or any number might be affected, either singly or all at one time—usually one or two new cases occurring each day, until the disease had run through the stable. The relative positions of the animals in the stables made no difference as to the order of their being attacked. One attack seemed to furnish immunity from a second. The disease appeared to be self-limiting, usually

lasting in those that I treated from four to ten days, convalescence lasting an additional week.

“Usually the first symptoms noticed would be that of profuse lachrymation, eyelids œdematous, loss of appetite, listlessness, head hanging low, recumbent when in stable, with general debility.

“On examination, the temperature ranged from 103 to 106°; respiration and pulse increased accordingly, with nothing remarkable about them. Auscultation showed no change in the lung structure that would show them to be especially involved. The mucous membranes were all œdematous, and the conjunctiva especially so, having the appearance of gelatine and almost transparent, showing the liver to be implicated in all cases; there was a slight cough in those cases that partook of the catarrhal form, in which the larynx was affected, as well as the upper air passages, with a very slight discharge from the nostrils. This condition I usually considered to be one of the complications.

“The complications met with were such as may be expected in any debilitating disease, viz., œdema of the extremities, purpura, and general prostration. One case that was brought to my office, and that I had ordered to the stable, was placed in a small building that had been used for a winter hen-house, the stall being about four feet wide and twelve long, with the entire south side of glass, allowing the sun to pour its concentrated rays upon the poor animal, producing a very marked case of cerebritis. In animals that were shipped for sale, to this market, that were already suffering from our acclimation fever, the disease was most severe, still the loss of life was very small when the large number of animals affected is taken into consideration.

“As to specific methods of treatment, I have none, and treated all of the cases in the manner that the existing symptoms demanded. Ext. belladonnæ fl.; tct. aconiti; ext. veratrum vir. fl.; ext. bryonia alb. fo.; potassii acetat; and liquor arsenicalis, were all used as they were in my mind indicated.

“My diagnosis: Enzootic cellulitis; specific, contagious, and infectious.”

MONTANA.

Dr. W. L. Williams, of Bozeman, presents the following interesting contribution :

“ I have had the privilege of observing two unusual diseases so far as our English veterinary literature is known. During the present year my attention has been called to an outbreak of a disease in sheep described by Prof. V. Babes, *bucraest ascarcehe*, and by Prof. Dr. Bonome, of Padua, as *parasitic ictero-haematuria*, occurring in the Deer Lodge Valley, where in a territory ten or twelve miles wide by twenty-one or twenty-five miles long there has been for five years an average annual loss of nearly two thousand sheep from this cause. I have not seen it elsewhere in the State, nor do I know of its occurrence in other parts of the United States, although I suspect it is common in some adjoining States, without recognition. I have also observed a wide prevalence of the *cytodites nudus* parasite of fowls, which has caused serious losses in this [Gallatin] valley among chickens and turkeys. I am not acquainted with poultry literature, and our literature deals so sparsely with pathology of birds that I have little idea of how common the affection may be, but, so far as I know, it has not been reported heretofore in America.”

NEW HAMPSHIRE.

The Cattle Commissioners' Report, January 1st, 1894, states that during 1893, one hundred and fifteen cattle have been condemned for tuberculosis in two hundred and twenty-one stables, and nineteen horses were destroyed for being affected with glanders.

NEW JERSEY.

Mr. Franklin Dye, the Secretary of the Commission on Tuberculosis in Animals, writes as follows :

“ Your first question as to the prevalence of infectious and contagious diseases in our state, New Jersey, in common with other States, has a sprinkling of those diseases. Nothing, however, seems to be unusually prevalent this year over past years unless it may be the increase of anthrax in one county recently, which, no doubt, will soon be subjugated. There have been a number of cases of glanders as in other years, but

no great per cent. Tuberculosis exists, but is not general. Certain stables, owing to the manner of keeping cattle, and to the neglect of eradicating the disease in the past two or three years, have in some cases become quite serious. Such, however, are being brought to the notice of our Tuberculosis Commission. Cases responding to the tuberculin test are destroyed and the stables put in better condition for future work. I would not venture to state any per cent. On the whole I may say greater vigilance is being exercised by our State authorities, having these matters in charge, and the more willing and earnest co-operation on the part of the stock owners with the authorities for the purpose of controlling the disease, and of placing the dairy, and dairy product especially, in a healthy and healthful condition. I would be glad to give you definite statistics, but it is impossible for me to do so."

NEW YORK.

Dr. John Faust, of Poughkeepsie, a member of this Committee, forwarded the following communication:

NEW YORK STATE BOARD OF HEALTH,
Albany, July 25, 1895.

To Mr. John Faust, V.S., Poughkeepsie, N. Y.

DEAR SIR:—In reply to your communication of the 24th inst. requesting information as to the number of horses killed in this State in one year on account of glanders, you are informed that the records of this department from September 23d, 1894, to date, show that seventy-seven horses have been certified to the comptroller as having been destroyed by order of local boards of health on account of glanders.

Very respectfully, your obedient servant,

BAXTER T. SMELZER, *Sec.*

"There is at present an epidemic of glanders in Long Island City. The State of New York pays \$50.00 per horse.

JOHN FAUST."

Dr. Faust will present a special report on anthrax, and preventive inoculations.

OHIO.

Dr. D. H. Kinsman, of the Live Stock Sanitary Board, addressed to me the following letter:

"Glanders, hog cholera, and a few cases of pneumonia among cattle have been reported. A quite extensive outbreak of hydrophobia prevailed among hogs, dogs, and cattle during the spring and early summer. Have no information on tuberculosis."

Dr. Wm. Gribble, of Washington Court House, writes:

"I cannot say that we have been over-burdened with any disease the past year. Influenza has been especially prevalent, but this locality's bugbear is tetanus, of which we have an abnormal share; why, we could never ascertain. In this letter I might state that we have experimented in destroying horses, and find that 48 calibre bullets, with brain running down over face, did not cause death in less than eight to twelve minutes. Enormous doses of morphia allows them to live quite a long time. Also aconite, digitalis, etc.; but a fifteen grain saturated solution of sulphate of strychnia (using boiling water), injected directly into the trachea, will cause death in from one to four minutes, according to the size and strength of the horse."

I will now introduce a letter from a veterinarian who has grown old in the love of his profession; one who has always been up to all the advancement of the science, and whose concise diction all of the older members will readily recognize—Dr. John C. Meyer, Sr., of Cincinnati:

"Yours of the 10th ult., came to hand in due time. After reading its contents, I observed that the questions are neither many, nor difficult to answer, and would be pleased to supply you with some important information, but such is not at hand from the fact that I retired from business two years ago owing to some defectiveness in my nervous and digestive functions, though not to such a degree as to make me lose all interest in our professional welfare. Consequently I take the liberty to make a few remarks relating to it.

"So far as I remember there has been no disease particularly prevalent within the last two or three years except hæmoglobinuria, which I have often heard mentioned by my son and his assistant, Dr. Tritschler. Glanders likewise received some attention. Pulmonary complaints demanded less professional

help. Indeed the expression, 'dull times,' which seemed almost proverbial in every branch of business, invaded the veterinary branch as well. The answer to the question, 'How is the stock?' invariably was, "Better than ever." Even Texas fever was not reported any more, either officially or privately. However, since the concerted action of the Live Stock Commission and veterinarians the ordinances pertaining to it have ceased to be a dead letter, at least in this district. Our stockyards are now exempt from such cattle, where they were usually sent without hindrance, distributing their virus, causing alarm, and heavy loss, which was a grave misdemeanor of the past.

"I was somewhat disgusted with the Hamburg muddle last year, and could not believe it until the *Berliner Thierarztliche Wochenschrift* published the account. The *Cincinnati Commercial Gazette* of the 19th, 20th, and 21st of July, reported an outbreak and spreading of the same epizootic in Louisville, Ky., and on August 7th, the same paper states that the mortality among cattle from the fever in middle Tennessee is alarming. If such reports gain currency, what will become of the United States Sanitary Administration?

"When I commenced practicing in Cincinnati this pestilence caused consternation among the dairy people; their loss was immense, and they were timorous about replacing their stock before the cold weather set in. Their calamity urged me to become acquainted with the characteristics of this plague, wherefore I made a number of post mortem examinations.

"Unimportant as it may seem to make mention of the fever remedy, acetanilid or antifebrin, officially recommended as reducing temperature and circulation, particularly in infectious morbidity, I now and then find deprecatory remarks about it in veterinary journals, which are apt to discourage some from giving it a fair trial, thus depriving them of a reliable expedient for shortening undue suffering. Undoubtedly, unfavorable results are due to avoidable causes. Its administration has never disappointed me, and I have used it almost exclusively since 1883 (the only other antifebrile agent

I once in a while have taken recourse to was quinine), giving it in $\frac{5}{8}$ dram doses once per day to a medium-sized, full-grown horse, in ball shape, electuary, or rectal injection. In solution (drench form), it penetrates quicker, and the stomach, on account of defective appetite, being more or less empty, the strength of the dose is not so readily determined, therefore, I never give it in that way. Toxic symptoms I have never met with. Nilitists tell us that their patients recover without it or any other medical interference, which I do not altogether dispute, but from experience I know that a proper dose of this medicament will very often relieve the sufferings of an animal for eight to ten hours in the twenty-four. It may even render it so much better that a recovery is more certain than his chance will be if the high temperature is permitted to have full sway.

“A short time before retiring from practice, I had a case of purpura hæmorrhagica; head, limbs, and abdomen tumefied; rusty discharge from the nose; petechia, etc., were the most conspicuous signs. As the patient, a team horse, was near my place, I concluded to make an attempt with bisulphate of quinia, to see what effect this remedy would have injected intravenous, which I introduced into the jugular by means of a two dram hypodermic syringe, three times on the first day, and twice on each the second, third and fourth days. By this time the swelling had so much reduced and appetite increased that the horse could be sent to pasture, where the ulceration in skin of pastern and hock joints soon healed, and the horse made a good recovery. It was my intention to repeat this experiment as soon as a suitable subject presented itself, in order to find out whether the good result, as I estimated it, is attributable to treatment, or whether it is mere accident; but opportunity would not favor me. So I am left in doubt in one respect. Am satisfied, however, that horses will tolerate ingredients in their circulation which are not exactly homogenous.

“Probably you remember a translation in the *REVIEW and Journal*, of a report by Dr. Jelkman, wherein he treated 100 horses with a scalma-like epizootic of laryngo-pharyngitis,

with morphia hydrochloric 2.0, and ag. amydulæ. amar. 200.0; ten grams of which solution were injected into the larynx of each patient every morning and evening. All my patients similarly affected were treated by this method as regularly as possible, considering they were not in such close proximity as Jelkman's, which were all in one stable and received immediate attention. And I believe I have acquired evidence enough to justify my saying that throat diseases are more readily controlled by this than any other way. A similar and equally valuable *modus operandi* as the preceding is the tracheal injection. Prof. Dieckerhoff reports excellent results with injections of Lugol's solution into the trachea in *morbus maculosus* (*blut-flecken-krankheit*).

"Though not new, I have not noticed any accounts either for or against this procedure lately. It is a much safer method than drenching, which, in cases of difficult deglutition, as, for instance, in parturient apoplexy which started the peristalsis, attended with moaning, indicating pain, but did not affect a cure.

"Now that the discoveries of micro-organisms, tuberculin, mallein, etc., have revolutionized the veterinary medical world, I shall not be surprised that some day one or the other of our great scientists may find himself the discoverer of specific antidotes against bacilli and their mischievous results."

(To be continued.)

CONTRIBUTION TO THE STUDY OF SWINE PLAGUE, HOG CHOLERA AND PNEUMOENTERITIS OF SWINE.

By DR. W. SILBERSCHMIDT.

(Continued from page 626.)

TRIALS BY SEROTHERAPY.

A. Swine Plague.—I have experimented upon rabbits and guinea-pigs with blood taken aseptically from the carotid or the femoral arteries of vaccinated animals, and tested against *swine plague* or against infectious pneumoenteritis. The blood, collected in a sterilized tube, was placed for several days in a

cool place until complete separation of the clots and the serum drawn with the pipette. I will relate some of my experiments:

No. 299.—Receives 5 cc. of serum from rabbit No. 101 in the vein of the ear. Test after 18 hours; the rabbit dies in the night of the eighth day. At post mortem are found, besides the very marked œdema of the ear, a small spleen, high congestion with small suppurative centers through both lungs. Culture of the blood gives a pure result. The witness receives 5 cc. of serum of a fresh rabbit, he dies about 22 hours after the testing injection, without other lesions than a small abscess at the point of inoculation. He lives about seven days longer.

No. 246.—Injection of 4.5 cc. of the serum of rabbit No. 198. Test 30 hours with $\frac{1}{20}$ cc. of culture of *swine plague* in bouillon. Large œdema of the ear with abscess which ulcerates spontaneously. Dead in five days. Post mortem shows that the abscess has extended under the skin of the head; the spleen is enlarged, few microbes in the blood. The witness dies in 20 hours after four days longer life.

No. 247.—Injection of 3 cc. of the serum of rabbit No. 178. Tested after 25 hours. Dead in five and one-half days. Œdema is very large, and abscess extends under the skin as far as in front of the sternum. The witness dies in 20 hours after four and a half days longer life.

No. 280.—Three injections of altogether 11.55 cc. of the serum of rabbit No. 198, the third injection of 6 cc. is made eight days after the first two. The test is applied two days after the last inoculation; the witness dies in less than 12 hours, a rabbit not well vaccinated in 30 hours. Our rabbit has at the point of injection a slight hyperaemia which disappears after four days. A second test, made twelve days after the first, kills the rabbit in about 30 hours.

No. 253.—Two injections, made 5 minutes apart, one intravenous of 4.5 cc., the other subcutaneous of 3 cc. of the serum of rabbit No. 198; test after 2 hours. A second rabbit submitted to the same experiment after having received another serum dies about seven days after. The rabbit showing no morbid symptoms, receives five days after the first testing inoculation $\frac{1}{20}$ cc. of virulent culture of *swine plague*, and dies in the night of the seventh day.

No. 276.—Subcutaneous injection of 11 cc. of the blood of a dog vaccinated against *swine plague*. Test after about 19 hours. The next day, temperature 41° , large tumefaction of the ear, intense diarrhœa, death in 51 hours. The witness dies in less than 18 hours. Longer length of life one and a half days.

No. 252.—Subcutaneous injection of 10 cc. of the blood of a dog vaccinated against *swine plague*; the next day another injection of 6 cc. of the same blood. Test after several hours; the œdema of the ear, very large on the second day of the testing examination, diminishes and reincreases again towards the sixth day; the rabbit dies in seven and a half days. Marked postponement of death. Small quantities of the blood of this vaccinated blood retarded the death but only a few hours.

No. 291.—Two subcutaneous injections of 6.5 cc. and 3.5 cc. of the blood of dog vaccinated against *swine plague*, and made twenty-three days apart. Test the fifth day after the second injection; the rabbit dies about in the same time as the witness, in 12 to 16 hours.

No. 331.—Injection of 3 cc. of the serum of rabbit No. 107. Test after 24 hours; immediately after, new injection of $\frac{3}{4}$ cc. of serum; these injections of serum are repeated the following days: the next day, large œdema of the ear, two injections of 1 cc. each; the two following days, one injection of 1 cc.; the fourth day the œdema increasing. I make two injections of $1\frac{1}{2}$ cc. each; the fifth day I inject 1.25 cc., the rabbit dies during the night, or five and a half days after the test; the witness died in less than 16 hours. Then longer life of five days. At post mortem, alongside the enormous œdema of the left ear, there is purulent pleurisy, unilateral, on the left side with pericarditis.

No. 333.—4-VI, 1k-750, at 55 minutes after 3 o'clock, injection of virulent culture of *swine plague* killing witness in 16 hours. At quarter past 7, 3 hours and one-half later, the rabbit receives 4.5 cc. of serum of rabbit No. 107. The next day the temperature is $39^{\circ} 4$ in the morning, $41^{\circ} 1$ at 4 o'clock P.M.; two injections of 2 and of 1 cc. of serum. 6-VI, 1k-665; ear œdematous; 49° at 10 o'clock A.M., injection of 1 cc. of serum; at 4 o'clock P.M., 42° . Injection of $2\frac{1}{4}$ cc. 7-VI, 9 o'clock, $39^{\circ} 9$, 1k-550. Injection of $1\frac{1}{2}$ cc. of serum, 7:30 P.M., $41^{\circ} 5$; injection of $\frac{1}{2}$ cc. of serum. 8-VI, 1k-550; 9 o'clock $39^{\circ} 7$. Injection of 1.75 cc. of serum and second injection of the same dose at 5 o'clock P.M. The rabbit dies during the night—he resisted four days longer than the witness.

At the post mortem, lesions are identical with those of No. 331. Ear much œdematous and ulcerated, purulent pleurisy with pericarditis, part of the lung hepatised. Microbes in the blood and in the pus. Pure cultures.

No. 335.—8-VI, 1k-665; at 9 P.M., injection of $\frac{1}{80}$ of virulent culture of *swine plague*, rectal temperature was 39° before the inoculation. The witness dies during the night.

At quarter to 3, $3\frac{3}{4}$ hours after the testing injection, the thermometer indicates $40^{\circ} 2$; injection of 7.5 cc. of the serum of rabbit No. 198. 9-VI, 40° ; injection of 2 cc. at 10 A.M. 10-IV, $41^{\circ} 4$ at 10 A.M., injection of 2.5 cc. of serum. 11-VI, 1k-770. The œdema increases, $40^{\circ} 3$. Injection of 3 cc. of serum. The 12-VI, the ear being very much tumefied, I make some small scarifications, washing with sublimate solution and painting with tincture of iodine, I inject besides 3 cc. of serum in the morning and 2 cc. in the evening. 13-VI, $40^{\circ} 3$. Weight 1k-625. Injection of 2.75 cc. in the morning, and 2 cc. in the evening. The 14-VI in the morning, the rabbit is lying down on its side, and notwithstanding a last injection of 3.5 cc. of serum, dies towards 11 o'clock A.M., five days and a half longer life.

Autopsy—Abscesses disseminated through the lungs with circumscribed hepatization in both cases. The blood gives a pure culture, but not very abundant.

I succeeded only in two cases to protect rabbits against *swine plague* with preventive injections of the serum of vaccinated rabbits; in both cases a second test has killed the animal, which proves that immunity thus conferred does not last.

In my numerous experiments, the rabbits have presented, after preventive injection of 2 cc. and more of the serum of vaccinated animals, a marked and constant extent of life compared to the witnesses, which was never observed in fresh

rabbits. To protect animals to the last, there would have been required a more active serum. Nevertheless, it is permitted to affirm, from the facts mentioned and numerous analogous results, that the serum of vaccinated animals, injected in new rabbits, has a preventive, vaccinating and therapeutic action. This action is much more manifest after the intravenous injection than after the subcutaneous inoculation. A fact to notice, the dog which had resisted several times to inoculations of 2.5 cc. of virulent blood and which consequently was much more vaccinated than the rabbits, has furnished a very little active serum; which is due probably because he had received a quantity of toxine relatively much less to its weight. I believe I can endorse the opinion expressed first by Mr. Metchnikoff, that the preventive power of the serum of vaccinated animals does not depend on the state of immunization of the animal, but is in direct proportion to the quantity of toxine injected.

The therapeutic action of the serum is about as great as its preventive, the last two mentioned experiments prove it; the rabbits treated several hours after the inoculation of the virus, at a moment where they already exhibited a noticeable elevation of temperature, have resisted as long as those which have received the preventive serum before the injection of the virus. It can be hoped that by increasing the dose of the toxine to inject, one will succeed, by the injection of the serum, not only to protect, but also to cure animals already diseased.

On different occasions I have received small doses of culture with the serum of vaccinated animals; this mixture cultivated, has, after a few minutes, a few hours or a few days, regularly given a culture, and its inoculation to various animals has brought on death as rapidly as the injection of culture without serum.

Conclusions.—1st. The serum of animals vaccinated against *swine plague* has no bactericide action *in vitro*, and injected with virus does not postpone the death of the rabbit.

2d. Two rabbits have resisted an injection of virulent culture of *swine plague* which has killed the witnesses, after the

previous inoculation of the serum of vaccinated animals. In a great number of other cases the resistance has been of a limited duration and the animals have died after a longer time than the witnesses, time varying from some hours to six days. This length of time depends on the activity of the serum, the dose injected, the mode of inoculation (in the vein or under the skin), and the space of time between the injection of the serum and that of the virus. In my experiments the injection of serum has no longer a preventive action, if the testing experiment was made six days after the first; the optimum seems to be in the first twenty-four hours, but it is better to wait several hours between the two injections.

3d. The injection of serum made after that of the virus, when there is already an elevation of temperature, postpones death about in the same measure as the preventive injection. In increasing the activity of the serum, from these results, one could obtain a preventive and an efficacious therapeutic effect.

4th. Animals having resisted a test of virulent culture, thanks to the preventive serum, have not by this fact obtained a lasting immunity; a second testing injection has produced death with a small extent of life against that of the witnesses.

5th. Injections of small doses of serum, repeated after the testing injection, have seemed to me to postpone the death, but not in proportion to the total of the quantity injected.

B. *Pneumoenteritis*.—No more than for *swine plague*, I have not here observed bactericide power *in vitro*; microbes of pneumoenteritis, left for several days in contact with the serum of vaccinated animals, have always given cultures; I have not examined if the virulency had been attenuated.

By opposition, the preventive action has been more accused than for *swine plague*, though it is with a microbe much less virulent, and that the serum that I used had been obtained from a rabbit vaccinated with a quantity of toxine relatively weak, which makes me suspect that there is yet another factor acting.

The two rabbits which received injections of this serum survived to the test, namely:

No. 326.—30-V, 1k-800; injection of 1 cc. of the serum of rabbit No. 238, vaccinated against pneumoenteritis. The next day injection of $\frac{3}{10}$ cc. of virulent blood. The witness dies inside of 18 hours.

1-VI, 39° 6; tumefaction of the ear. 2-VI, 40° 7 in the morning, 40° 5 at 7 P.M.; two injections of 2 cc. 3-VI, 1k-810; 39° 3 at 2 P.M.; injection of 1 cc. of serum. 4-VI, 1k-700; at one o'clock 39° 5; fourth injection of $\frac{1}{5}$ cc. of serum. The abscess of the ear began to soften; the 9-VI, the skin covering the abscess gets loose, the rabbit recovers entirely.

No. 346.—15-VI, 1k-710; injection of 10 cc. of the serum of rabbit No. 238. One hour later, injection of $\frac{3}{10}$ cc. of virulent blood of pneumoenteritis. 16-VI, 8 A.M., 41°; one o'clock in the afternoon 40° 7. 17-VI, 40°; 18-VI, 1k-550, 39° 7 at 4 P.M.; injection of 5 cc. of serum. 20-VI, 1k-115, another injection of 5 cc. of serum. From this day the animal increases in weight, improves and continues to be well. Two witnesses, one of which had received serum of normal rabbits, died the 17th and the 18-VI.

One cow, with injections of the serum of vaccinated rabbit, immunized rabbits against an injection of virulent pneumoenteritis. This result confirms that of Mr. Metchnikoff.

C. *Comparative experiments of Serotherapy.*—It was interesting to know if the serum of rabbits vaccinated against *swine plague* would grant a certain degree of immunity against the virus of *hog cholera* and of pneumoenteritis. The following are experiments made in that direction.

No. 325.—30-VI, injection of 5 cc. of the serum of rabbit No. 107, vaccinated and tested against *swine plague*. 31-V, after 24 hours, injection of $\frac{1}{10}$ cc. of virulent blood of *hog cholera*. The witness dies in 18 hours. The 1-VI, great hyperæmia; the 2-VI, the rabbit shows a temperature of 42° at 8 A.M; the ear is drooping; second injection of serum at 6 P.M.; death at 7.30. The rabbit inoculated with the preventive serum resisted 30 hours longer than the fresh rabbit.

No. 307.—1k-440. Injection of $\frac{4}{5}$ cc. of the serum of rabbit No. 107, vaccinated against *swine plague*; testing inoculation of *hog cholera* after 5 hours. The rabbit has a large œdema, and dies 21 hours after the injection of the virus; the witness, which weighed 1k-715, dies 5 hours earlier. Here again, the action was evident, but the rabbit was too young.

No. 324.—30-V; injection of 4 cc. of the serum of rabbit No. 107, vaccinated against *swine plague*. 31-V, after 24 hours, injections of $\frac{3}{10}$ cc. of virulent blood of pneumoenteritis. The witness dies in 42 hours.

1-VI, 9.30 A.M., 41° 6; ear tumefied. 2-VI, 8.30 A.M., 40° 5, injection of 2 cc. of serum; 3-VI, 39° 7; another injection of 1 cc. of serum; 4-VI, 40° 6; injection of $\frac{1}{2}$ cc. of serum, and the 5-VI, last injection of 1 cc. The rabbit had in all 9 cc. of serum. He had been tested and treated with rabbit No. 326, which was protected with 8 cc. of the serum from the rabbit vaccinated against pneumoenteritis.

Guinea-pig No. 6.—17-VII. Subcutaneous injection of 2 cc. of the serum from rabbit No. 107 vaccinated against *swine plague*. 18-VII, injection of $\frac{3}{10}$ cc. of blood of pneumoenteritis. The witness dies in the night of the 19th to the 20th—

VII. The guinea-pig has fever the following days ($40^{\circ} 3$ in the morning), with tumefaction at the point of inoculation; after a few days the abscess is more defined and the guinea pig continues to be well.

Guinea-pig No. 3.—12-VII, ten o'clock; subcutaneous injection of 2 cc. of the serum from rabbit No. 107 vaccinated against *swine plague*; another injection of 2 cc. the 14-VII. A quarter of an hour later injection of $\frac{3}{10}$ of virulent blood of pneumoenteritis, which kills the witness in 52 hours; the guinea-pig soon recovers.

This same serum of the rabbit vaccinated against *swine plague* has been injected in the dose of 2 cc. to another guinea-pig (No. 5), that afterwards I tested against *swine plague*, the animal died in 25 hours, only three hours after the witness.

These few experiments show that the serum of a rabbit vaccinated against *swine plague*, powerless to protect animals against that disease, immunizes rabbits and guinea-pigs against pneumoenteritis. Its preventive action against the virus of *hog cholera* is as evident as for that of *swine plague*.

These results confirm those obtained with vaccinated animals and support the conclusion mentioned previously.

GENERAL CONCLUSIONS.

1st. The diseases of swine, known as *swine plague* (Salmon), *hog cholera* (Salmon), and infectious pneumoenteritis, are due to one and the same virus. Though differing in some morphological characters, the three microbes have shown themselves analogous to the point of view of microbial products, of pathogenous properties, morbid symptoms and lesions in animals (rabbit, guinea-pigs, mice, pigeon.)

2d. The differences of virulency and of toxicity are only quantitative. One can admit that they have been produced by external influences, as those differences are not constant.

3. The vaccination of rabbits against the virulent microbe has been obtained with the sterilized blood and cultures; it lasts at least several months. Animals vaccinated against the most active virus are refractory to less virulent microbes, but the opposite does not take place; animals immunized against the less virulent microbe have succumbed to the injection of a stronger microbe, presenting, it is true, a far superior resistance to that of the witnesses. To generalize the method and obtain positive results, it is then indispensable to take the most virulent microbe as a starting point.

4th. Immunization is also possible with injections of the serum from vaccinated animals; in this case it is but short.

5th. Everything indicates that these results are applicable to swine, and in keeping up experiments upon this animal, one may hope to obtain a serum able to exert a preventive and efficacious therapeutic action.

PYÆMIA IN THE DOG.

BY H. H. DELL.

A Paper read before the Montreal Veterinary Medical Association.

I have been guided in the selection of my subject for your consideration this evening by a desire to direct your attention to a disease but little referred to in our literature. I was quite unaware of the paucity of information in the text-books concerning pyæmia in the dog, until I began to consult the several libraries to which I have had access. Later on I will report in detail a case which came under my own observation and following an operation of the most trivial nature.

Pyæmia is a disease characterized by recurrent chills and intermittent fever, with the formation of abscesses in various parts of the body resulting from contamination of the blood by the bacteria of suppuration. The point from which the bacteria and their products are distributed is usually a suppurating wound. Thrombi frequently result, which degenerate and break down, the fragments being carried along in the blood-stream and thus convey the infection to organs far removed from the original seat of suppuration. The lymphatic system also may convey the infective material to distant organs. The disease is somewhat insidious in its nature, and for this reason frequently obtains a foothold upon the animal before it is suspected.

The symptoms which are presented are occasioned by the inflammatory processes and the metastases. Fever of an intermittent type accompanied by chills is seen in all cases. The other symptoms vary with the organs most affected, and when we bear in mind the many organs in which the metastases occur, we are not surprised at the complexity of the symptoms.

Both pyæmia and septicæmia usually have their origin in wounds, but cases are recorded where no wound has been discovered; these apparently idiopathic cases being designated as of spontaneous origin; but reasoning from analogy rather than our practical experience with the disease, I think the doctrine of spontaneity no more tenable in this particular disease than in others.

Pyæmia and septicæmia are, I think, the unsuspected cause of much of the mortality following surgical operations in veterinary practice. The unfavorable terminations are hastily concluded to be the result of causes other than the entrance into the animal economy of organisms whose potency in the causation of diseases is beyond doubt. Diagnoses are made, but how rarely are autopsies performed to verify the same. To introduce into our practice the conditions of asepsis and antisepsis obtained in our well-regulated human hospitals is obviously quite impossible.

But do we as practitioners always endeavor to apply as far as possible in our practice the doctrines of Lister?

Are we not frequently careless in this respect, and because we cannot easily attain perfect conditions, do we not satisfy ourselves with a minimum amount in that direction and then blindly attribute failure to anything rather than our own carelessness or neglect?

Our English text-books on the practice of medicine and surgery contain descriptions of pyæmia based for the most part on the experiments of Koch, and refer to the occurrence of the disease in horses, cattle and sheep, but, singularly enough, no cases are recorded of the disease in dogs.

Our cynological literature also treats but little of the disease. Woodruff Hill is the only one of the many writers I have consulted who refers to the disease. He advises strict cleanliness in the treatment of even small wounds, as "pyæmia and septicæmia may follow carelessness in this respect."

The French works I have had at my disposal give the matter very little notice. Rolle's "*Pathologie Morbide*" contains a good account of the disease, but makes no reference to

its occurrence in the canine, and more surprising is the fact that in the "Maladie des Chiens" (a French translation of Hertwig), I failed to find either pyæmia or septicæmia mentioned among the list of diseases to which the dog is liable.

In the *Deutsche Zeitschrift für Thiermedizin*, Vol. IX, page 92, pyæmia is mentioned as occurring in young dogs following omphalitis.

In the *Monatshrift für Thierheilkunde*, Vol. IV, page 381, Frohner records a case of pyæmia in the bitch following an attack of endometritis.

Rabe, in the *Berliner Thierarztliche Wochenschrift* (1888, page 65), describes the formation of multiple abscesses due to an organism resembling actinomyces.

The case referred to in my opening remarks was that of an aged cocker spaniel dog, which was brought to the college hospital on October 4, with the history of having the end of his tail crushed by being run over by a street car. Amputation was performed at the articulation between the fifth and sixth coccygeal vertebræ. The animal continued in good health, but the local conditions not being satisfactory, it was decided to excise another vertebræ and leave a flap of skin to form the stump. This was done on October 12. The parts were washed before the operation with soap and water, followed by a 1 per cent. solution of carbolic acid. Hands and instruments were also subjected to similar antiseptic treatment. Excision being effected, the edges of the skin were brought into apposition by sutures, the wound dusted with iodoform and a bandage applied. The wound was dressed on October 14, and found to be healing by granulation at the upper part, while from the lower there was a very slight discharge of a serous nature.

On the 16th there was no evidence of a discharge, the entire wound appeared to be united sufficiently to remove the sutures. The first symptom of any indisposition that presented itself was anorexia on the morning of the 17th, and then the temperature was found to be 101° F.

A 9 P.M. the thermometer registered a temperature of 104°, pulse 80, and as the animal still refused food and appeared

to be very weak and depressed, beef tea and stimulants were administered. On the morning of the 18th the only change in the symptoms was such increased weakness that a fatal issue seemed very near. At 11 A.M. he was carried into the cynology clinic, where he expired before any physical examination could be made.

Dr. Mills, from the history, diagnosed pyæmia or septicæmia, which was verified later by post-mortem examination.

The autopsy was held nine hours after death, and revealed the following conditions: Serous cavities dry, intestines distended, serous coats showed reddened patches, but there were no signs of peritonitis.

Spleen.—Extending along the middle of the abdominal cavity it was greatly enlarged, congested, soft, with numerous large hæmorrhagic infarcts and minute abscess formations.

Kidneys.—Enlarged, capsule easily removed, surfaces smooth, pale and mottled with areas of congestion and hæmorrhages. On section showed great fatty degeneration, large, white necrotic infarcts, but no signs of multiple abscesses visible to the naked eye. Pelves and ureters injected.

Liver large, congested, fatty, firm, without the presence of abscesses. There were also several small superficial areas of necrosis.

The *intestines* contained much mucous, and a specimen of tænia 75 cm. in length. Otherwise no evidence of disease.

The *heart* was normal in size, containing a moderate amount of blood, blue-black in color, and also a small quantity of mixed clot. The muscle was firm, deep red in color, and free from abscesses. Aortic valves were chronically thickened at their attached margins, the right posterior valve had recent dark-colored vegetations upon it, while behind it was a small recent thrombus. The left posterior valve was greatly degenerated, its free margin showing much loss of substance and numerous vegetations. At the attached margin were two deep ulcerations involving the heart substance. There was also slight fusion of the valves.

Lungs.—The bronchi were slightly reddened, larger vessels free; otherwise no evidence of pulmonary disease. The brain was normal.

Tail.—Extremity presented small, sloughy aperture, without macroscopic evidence of thrombi.

The articulations showed no traces of abscess formation.

Microscopic examination of organs stained with methylene blue revealed the following results:

In the *spleen* numerous large hæmorrhages and very minute abscesses, and throughout small collections of cocci (apparently staphylococcus pyogenes), evidently of embolic origin.

Kidneys showed a similar condition and also advanced parenchymatous degeneration.

In the *liver* were hæmorrhages, old and recent, and areas of necrosis. Cells in the centre of the lobule showed early atrophy. No true abscesses were apparent, but cocci were present in arteries and veins, and invading the bile ducts.

The *heart* muscle showed cocci in the capillaries but no abscess formation.

Tail.—A section from the site of the wound showed considerable necrosis, small cell infiltration, together with granulation tissue. The veins themselves, so far as could be made out, did not show on being stained with methylene blue any trace of bacteria in their lumen. Loose thrombi, and some partially organized, are seen in the vessels, but further examination was rendered unsatisfactory owing to conditions under the tail, which had been preserved.

Conclusions and Pathological Diagnosis.—Death from *pyæmia* following the operation on the tail. Thrombo-phlebitis in the vessels. Acute ulcerative aortic endocarditis with metastatic abscesses in the kidney and spleen, parenchymatous nephritis, necrosis in the liver.

Interesting Features.—It is interesting to notice the virulence of the disease following so simple and trivial an operation. Further, the very few clinical symptoms are also not what would be expected in a disease making such rapid advances; while again, the freedom of the lungs and articulations from abscesses is one particular wherein the disease in this case did not follow the usual course as seen in other animals.

It affords me great pleasure to acknowledge the most valuable assistance rendered me by Drs. Adami and Martin, of the Pathological Laboratory, in the investigations of this case.

REPORTS OF CASES.

A CASE OF TETANUS CURED WITH ANTITOXIN.

BY GEO. JOBSON, V.S., Oil City, Pa.

The curative treatment by means of antitoxin, although as yet confined to a limited number of diseases, opens a field whose limits we cannot yet define, and many diseases which are now looked upon as fatal may in the near future be cured by this form of treatment. The discovery of tetanus antitoxin is one of the most recent and valuable additions to the list, and it is the only known remedy at present that can be relied upon to cure this generally fatal disease:

Before proceeding with a description of the case referred to, it will be well to give a brief outline of the cause of the disease, so that we may better understand the action of the remedy. Tetanus is a germ disease which attacks most all species of domestic animals, and man; and it is characterized by spasmodic convulsions of the muscles, which, before attacking the entire apparatus generally begins in a limited number; for instance, when the face muscles are affected and the jaws become locked, it is called "lockjaw." Later the entire apparatus is involved, and the body becomes rigid; a condition which is brought about by the entrance of germs into the system, and the formation of them by poisons, called toxins.

That tetanus occurs spontaneously has very few supporters at present, as it is necessary to have the presence of the toxin or poison before the disease is produced, and the germs which produce it may gain entrance to the system by the slightest kind of a wound.

The bacillus of tetanus is an anærobic germ, *i. e.*, one which cannot live in the presence of the atmosphere, the oxygen in it being the destructive agent. This rod-shaped germ is widely

diffused to all parts of the earth, and occurs in manure, rich garden earth, and in fact everywhere the air cannot penetrate. It is said that the presence of the germ has been revealed in the intestines of herbivora, and this may be an explanation of the cause of the so-called cases of idiopathic tetanus, the enemy gaining entrance by means of a wound in the intestinal wall. When the tissues are bruised and torn their vitality is lessened and a condition exists which is favorable to the growth of the bacillus of tetanus. But should the wound be sharply defined, the surrounding tissues uninjured, and the arterial blood flow freely, then unfavorable conditions exist for its growth, as the oxygen contained in the vital fluid tends to destroy the germs, and the migratory cells from the surrounding healthy tissues come forth to combat the enemy. When the bacilli find a medium suitable for their growth they form a poison called toxin, which is the agent that causes the symptomatic muscular contractions. The bacillus does not cause the tetanic convulsions except in an indirect manner, that is, by the production of the poison or toxin, which acts as an irritant to the system. If the system possesses sufficient vitality to resist the effects of the toxin for a length of time, a material called antitoxin is formed by it, which neutralizes the effects of the toxin. If then we supply the system with antitoxin we fortify it with the material it craves to combat the germ poison. So that by the use of prepared antitoxin we can supply the system in several days with a material it requires months to form, granted it can resist the action of the virulent poison of the germs so long.

The case about to be described is not cited simply because the animal recovered, as I have had several cases recover by medicinal treatment alone; but because the effects of the material were almost immediate, while by the old methods it required months sometimes to produce the same results.

CASE.—A chestnut pony gelding used in a grocery wagon received a wound in the neck from a rusty nail sticking out of a board in the stall. In about nine days afterwards the man in charge noticed a slight stiffness during locomotion, but it was not thought serious and the animal was kept at work

until the next day, when he was brought to the office, and a diagnosis of incipient tetanus was made, and it was advised to have the animal unhitched and removed to his stall.

Nerve sedatives and anti-spasmodics were given, but the animal grew steadily worse, and on November 3d it was a well marked case of tetanus. The muscles of the trunk and limbs were now stiff, but trismus had not as yet occurred, and with assistance the animal was able to rise when down.

Having read an article by Paul Gibier, M.D., Director of the New York Pasteur Institute, on the treatment of this disease in man by the use of antitoxin, and to whom I am indebted for some of the above statements, I suggested to the owner that we send to the institute for a sufficient quantity of antitoxin to give it a fair trial, if it did not cost too much, and he consented. Before the arrival of the antitoxin, on the morning of November 7th, the horse was found lying in the stall unable to rise. Slings were put under him and on being raised to his feet was unable to stand. The entire muscular system was stiff and the jaws locked. Respiration was rapid and conducted with much difficulty. The slightest disturbance would bring on spasms, and it looked doubtful if the horse would live any length of time.

On November 9th, a supply of antitoxin sufficient for three injections was received from the institute, and at 4:15 P. M., assisted by my father, the first injection was made. The hair being first shaved from portions of the neck, the parts were washed with a solution of carbolic acid, and the antitoxin in solution was injected hypodermically. Immediately before the injection the pulse was 44, temperature, $100\frac{3}{5}^{\circ}\text{F}$. and respiration 72. The wound was washed with iodine, 1; potassium iodide, 2; and water, 100 parts. When the second injection was given next morning, the respirations had dropped to 55, pulse 40, and the temperature had risen to $101\frac{3}{5}^{\circ}\text{F}$. Improvement in the condition of the muscles of the body and limbs were general, while the muscles of the jaws were decidedly improved. The neck being moved from side to side, instead of being held in a straight line as previously.

On November 11th the third injection was made and a

further improvement was visible; the respirations being 52, pulse 40, and temperature $100\frac{2}{5}^{\circ}$. The muscles of the jaws could be freely used in masticating. Improvement continued steadily until six days after when he was taken out of the slings and walked around the yard. Recovery is now complete and the horse is doing his regular work.

ANTITOXIN IN TETANUS.

By J. S. LAMKIN, D.V.S., Yonkers, N. Y.

I received a request to write a report of my recent case of tetanus, but I was unable to do so at the time, as the animal was still suffering from the effects of the last injection as hereinafter described, and as I wanted to see him again I delayed writing, in the hope of being able to see you in person, in time for the January REVIEW, but could not do so.

On October 28th I was called to see a bay horse suffering from tetanus. The symptoms were all well developed, head extended, breathing rapid, hind legs straddling, tail erect and quivering, and any quick movement or noise causing a spasm. He had been docked about six weeks previously, but the end of the tail had not healed, but was ulcerated and angry-looking. His jaws were not closely locked, and he would eat oats and bran and even a little hay if cut up and mixed with bran or meal. I advised antitoxin, or rather told the owner that it was, in my opinion, the only thing that offered any hope for the animal, and he said, "go ahead;" so I procured four bottles of the liquid antitoxin and gave full doses every six hours for four doses, then procured more and gave half-doses, afterwards lengthening the interval between them to night and morning. After the fourth dose there was some little improvement and I gave an aloes ball without very much trouble, the jaws having relaxed considerably. After using eight bottles, I had to take some of the dry antitoxin, as the liquid agent was exhausted, and in connection with it my first and only complication arose. I diluted a whole dose, using distilled water in the sterilized bottles obtained with the antitoxin, and injected one-half of it, leaving the remainder for evening;

but the animal appeared so much better then, that I put it off and did not give him that dose for two days, in the meantime going into the Pasteur Institute, and asking if it would be safe to use it after being diluted so long, and was told it would. So I injected it, and the next morning a swelling as large as a man's fist appeared very sore, and which had not gone *entirely* away when I saw the animal last, some two weeks ago. The first half-dose, injected immediately after being dissolved, caused no irritation, neither did the liquid agent; so I suppose that some poisonous change occurred during the two days of its being in solution. The animal was eating and feeling well when I saw him last, and I do not fear a relapse.

A second case, though, a few days ago had quite a different course and termination. This animal had also been docked about a month before, and the end of the tail was, like the other, very sore. He was more nervous, and the jaws were tightly locked. I commenced at once using the dry anti-toxin, but as it seemed irritant, every injection causing a swelling the size of a hen's egg, I procured the liquid, which worked better in this respect, and used altogether seven bottles, but the animal did not respond to it, but, on the contrary, grew worse, and we had him destroyed.

I hope to hear from others using it.

MILK FEVER.

BY HERBERT S. PERLEY, V. S., St. Albans, Vt.

There is nothing very peculiar about this case except that it recovered, and it is merely given because it introduces a new treatment which I believe originated with Dr. Frank Miller, of Burlington, Vermont.

On December 2d, I was called to attend a cow on the farm of the Franklin County Creamery Association. I found the animal, a five-year-old grade cow, heavy milker and feeder. She had dropped a healthy calf the day before, and had appeared well till that morning when she was seen to stagger and finally go down.

She was in a comatose condition when I saw her, with the head turned around to the side.

I gave her a grain and a half of eserine and put her onto stimulants every three hours. Applied moist heat to loins and covered her up in a pile of straw.

Injected two drachms of liquor strychnia every two hours ; this is what I referred to as Dr. Miller's treatment, and the cow made a good recovery in fifty-six hours. I consider this a little unusual, as the animal was taken so soon after calving, viz., twelve hours. Whether to lay it to the strychnia or not I do not know, but shall certainly try it again.

A QUEER WINE CELLAR.

BY WM. DOUGHERTY, D.V.S., Baltimore, Md.

While holding an autopsy a few days since, at one of our fertilizing factories, the man in charge gave me a German wine bottle, about sixteen inches high, that he had removed from a very small mule the day before. It was lodged in the small intestine. The bottle is now covered with intestine, and there is also some liquid in the bottle. I tried to trace the history of the case, and find, if possible, the manner in which the bottle got there.

The mule belonged to a foundry, and was taken with colic, and treated by the stable boss for two days, and then by a homeopathic veterinarian for about a week. Did not improve, and was sent to a veterinary hospital and remained there about two weeks.

Diagnosis, "calculus." While at hospital had been treated with pilocarpine and eserine for constipation; did not eat much, nor have any passage to speak of. Was returned to owner very much emaciated and covered with bed-sores.

The owner had him destroyed. I was unable to discover or find out in any way, how the bottle could possibly have gotten there.

GLANDERS AND MALLEIN.

BY DR. L. MCLEAN, M.R.C.V.S., Brooklyn, N. Y.

Some time ago you were kind enough to supply me with a quantity of mallein; when you did so you imposed one con-

dition, i.e., that I would report to you, for publication, some of my experiences of an exceptional character, as to its value as a diagnostic agent in glanders. While there may be nothing very exceptional in the following case, it strongly confirms how reliable a factor it is in ferreting out the existence or non-existence of this disease in the equine race.

In a stable of eighty horses (of which I have professional charge), one morning early in last October my attention was called to a black six-year-old gelding in prime condition, with slight discharge from near nostril. Upon examination I found the same to be a confirmed case of glanders; the animal was immediately isolated and on the following morning destroyed. On the morning of the following Sunday I made a thorough examination of all the horses; found one black mare with a very slight discharge from near nostril and a perceptible enlargement of the sub-maxillary gland of the same side (neither indurated nor adherent.) The driver of the animal said that she had a periodic cough; in every other respect she seemed normal and in prime condition. On taking her temperature, I found the thermometer to register 103° . The animal was not known to have come in direct contact with the one already destroyed, as above referred to. This mare was at once isolated and a smart cathartic administered, which operated freely. On the third day her temperature was down to 101° , and the tumefaction of the gland almost entirely disappeared; but there was a perceptible foetid odor from the near nostril and slight discharge. On Oct. 29th I subjected her to the mallein test, with the following results:

Inoculated the same at 4 P.M., the temperature then being $101\frac{1}{5}$; at 7 P.M., $102\frac{2}{5}$; at 8 P.M., 103 and at 10 P.M., $103\frac{2}{5}$. On the morning of the 30th, at six o'clock, $105\frac{2}{5}$; at 8 A.M., $104\frac{3}{8}$; at 12 M., 104 ; at 4 P.M., $103\frac{7}{8}$; at 8:30 P.M., 105 and at 10:15 P.M., 105 . On the morning of the 31st, at six o'clock, 104 ; at 12 M., 104 ; at 4 P.M., 103 ; at 8 P.M., $103\frac{1}{4}$ and at 10 P.M., 103 . November 1st, at 6 A.M., 103 ; at 4 P.M., 103 ; at 6 P.M., 103 and at 10 P.M., 103 . November 2d, at 6 A.M., 101 and at 10 A. M., 101 . November 3d, at 7 A.M., 101 and at 3 P.M., 101 .

For the first two days the animal went slightly off her

feed and the seat of inoculation was tumefied and painful to the touch ; so much so that she winced when putting forward the hand to manipulate the same.

Having full faith in mallein, the above was conclusive evidence to me that the animal was affected with glanders, and I so reported to the owner, but the mare being a favorite, and, to a casual observer, in a perfectly healthy condition, he was reluctant to consent to having her killed ; the animal looking well, feeding well, but the temperature ranging from 101 to 101 $\frac{1}{2}$.

On November 9th she was again inoculated, for the second time, with precisely the same results, which I reported to the owner, still he would not consent to her destruction and made the remark that to inject the same stuff below the skin of any animal, would bring about the same results. I there and then volunteered to put it to the test.

On the morning of the 14th the mare was for the third time inoculated. At the same time I inoculated one of my own horses. The reaction in the black mare, within 24 hours, registered up to 104, while in the case of my own horse, there was no deviation from the normal temperature, and although, at the seat of inoculation, there was slight tumefaction there was no heat, or pain on pressure. I submitted these facts to the owner, and requested him to draw his own conclusions. He at once expressed his satisfaction and consented to have the animal destroyed.

The post mortem, which was made at the American Veterinary College in the presence of the entire class, revealed the characteristic lesions of this disease, although in a very minute form, both in the air passages and the lymphatics of the pulmonary pleura, the lungs presenting numerous small glanderous deposits, the bronchial lymphatic glands being enlarged and infiltrated, while the septum nasi showed several small, hard tumors of glanderous nature.

Query : How many horses in New York and Brooklyn would defy the mallein test? Am I safe in saying that from 10 to 15 per cent. of the horses in both cities would react to this test.

ACUTE INDIGESTION IN A COLT.

BY DR. MOYLE, Waterford, Wis.

On October 30, 1895, I was called to see a three-year-old colt showing all the symptoms of abdominal pain, frequently getting up and lying down, pulse 90 per minute, temperature 103°F., abdominal walls very much distended with gas, with prolapsus of the rectum.

Upon puncturing the cæcum with the trocar the gases, although mixed with fluid, were quickly eliminated, and gave the animal almost instant relief. I then replaced the protruding rectum, and would like to have given an enema of warm soapsuds, but being without my rectal pump was unable to do so. I then prescribed the following drench;

Aloes soc., pulv. zingib., spts. terebinth, tinct. opii., one oz.; hydrarg. sub-chloride, one drachm; aqua, half pint; to be given at once, and left two more doses of calomel to be given, one in two the other in four hours later. My reason for so doing was on account of the icterus condition of all the visible mucous membranes, and left orders to be called next morning if the colt showed symptoms of pain.

Next morning, being called, found colt in about the same condition as the previous night, again used the trocar with good result, the animal then receiving rectal injections, which were continued until six pails of warm soapsuds were used. I then gave a drench composed of tr. nucis. vom., spts. ether nit., one oz.; aqua, half pint. In about five hours the evacuations, which were at first colorless, became mixed with fæces, animal seemed to feel much better, drank a little water and began looking for something to eat. From this on he made a rapid recovery.

A CASE OF POISONING FROM BAD WATER.

BY W. H. DERR, V.S., Mansfield, Ohio.

Was called to the farm of Thomas Burgett on the afternoon of the 4th of September to see a mare he said was slightly ailing. Found the patient, grey mare, about 1,200 pounds, five years old.

History.—Two or three days previous she was noticed to

be weak and easily fatigued. Day before, September 3d, she was noticed to pass black-colored urine. Appetite good up to noon of the 4th, with slight colicky pains.

On examination I found temperature $106\frac{2}{5}^{\circ}$, pulse 85, weak, breathing accelerated, membrane reddened, left lung congested and urine very black; ears and legs partially cold. I reserved my diagnosis, and prescribed slippery elm gruels. Also bellad. fl. ex., tinct. aconite and tinct. iron, to be given in gruel with sod. hyposulp. in drinking water. Prognosis grave, but the owner laughed at this, as he did not consider much wrong.

I called on the morning of the 5th and found my patient on the field ready for the grave. I held a post mortem and found all healthy except the lung (left), with the peritoneum darkened, and kidneys slightly congested. When through with the post mortem one of the farm hands told me to look at a big bay gelding (one that had helped haul out the mare), as he seems drowsy. I felt his pulse and found it all right; and he said he ate well.

That night, the 5th, I was again called to the farm and found the gelding in bad condition; with severe pains, urine, if anything, darker than mare's, circulation 70, temperature 104° . I then suspected something they were eating. I put him under same treatment as the mare, increasing the sod. hyposulp. I drew some of the urine and analyzed it, and found blood corpuscles in abundance, with some kind of spores. I do not know the name.

In the morning I found the patient worse in every way; no appetite, neither would he partake of water, temperature $105\frac{1}{2}^{\circ}$, pulse 90, breathing 40, severe abdominal pain, and frequent urination, membrane pale and of a dark hue. Six or eight weeks previous I had a bad case of purpura on the same farm, and I thought it might be a hidden case, but could see no symptoms whatever. I telegraphed for my father at Wooster, O., and consulted with him, and he agreed with me as to the diet or drinking water causing it. We continued the same treatment, with addition of spts. turpentine.

Next day I examined all the horses on the farm, some ten or twelve head, and found two affected with dark urine, other-

wise healthy, except a slight elevation in temperature. The water was low in the well where they got their water, and I examined it and found it very unhealthy, being loaded with organic matter. I placed them all on other water and none of the others were affected. The bay horse began to improve the fourth day and made a good recovery, but was very weak for some time, and last week was shipped to New York, being as fat and in good spirits as could be.

A COMPLICATED CASE.

By W. H. DERR, V.S., Mansfield, Ohio.

Was called on forenoon of the 10th of December to see a grey horse belonging to the mail department of the city. He had been ailing several days, but had entirely refused feed on the morning of the 10th. Found him with temperature 105°, pulse 80 and very weak, breathing 28, membranes injected. Right lung blocked to the upper third, legs swollen, ears and legs cold.

Diagnosis.—Influenza with pneumonia of the right lung. Being a short distance from the hospital I had him removed there and gave the usual treatment, with mustard to the side. Gave stimulants, and he brightened up and seemed better in the evening. About 8 o'clock he began pawing and became very restless, looking back to sides, but did not attempt to lie down.

I then gave him fl. ex. can. ind., half pint; fl. ex. bellad, one ounce, and he seemed relieved. He received the other treatment through the night. On the morning of the 11th, much worse, except appetite, which was improved. Temperature 107°, pulse 102 very weak, breathing 45, legs and body cold, had no pain, bowels not moving; gave him one and a half pints of raw oil and added half pint doses fl. ex. nux. vom., every four hours. In the evening, abdominal pain, continued pawing, no appetite, temperature and pulse same as morning. Placed in hot blankets from shoulders to flanks and hot water applied every fifteen minutes, all night.

Morning of the 12th, temperature 104½°, pulse 80, breath-

ing 25, intervals of rest, but still in pain, lying down for two or three minutes at a time, no action of bowels; gave strychnine sulph., one-half gr. hypodermically, and repeated in the afternoon and again at 10 o'clock, with no relief. I also gave another quart of oil.

Morning of the 13th, condition worse, again repeated the blankets, but had no hopes of a recovery, although I did have if I could have opened the bowels. Gave strychnine sulph. one-half gr., and at noon gave him strychnine sulph., one gr.; eserine, one gr. in two ounces of water under the skin of the breast. He then got in very severe pain, but in forty-five minutes his bowels began to move, and he had eight or ten passages before night, but he also continued in severe pain; hot water blankets were again applied all night, and also plenty of gruels were given. Next morning he was better, but had laminitis, being very sore on all feet. Hair of mane and tail was loosened, but under the usual treatment he made a good recovery, and was to-day, December 18, dismissed with a good appetite and temperature normal, but pulse a little accelerated, feet all right, and no more hair falling out.

In reporting this case I wish to call attention to the strychnine and eserine, as I find good benefit from the combination. I know it was none of the best to use them in the case reported, but I wanted to move the bowels if possible, as I had no hope if I could not do so soon.

JABORANDI IN CEREBRITIS.

By FRANCIS ABELE, Quincy, Mass.

Some time ago I noticed an article in the REVIEW recommending fluid extract of jaborandi for cerebritis. Had used it on two cases just before, so was quite interested.

Number one was a big bay coal wagon horse used singly. Understand that when he was stuck, owner sometimes struck him over head. Found horse walking about yard listlessly, where he had been chased so as not to damage barn. Eyes were fixed, he would not back, would not turn, and would not lead unless whipped hard. Usually would not

stand whip. When let into stall would push into corner and bruise his face, at times would get delirious and strike at the front of box. Bled at mouth, gave cathartic, blistered poll after cold douches, and followed with fluid extract of jaborandi and potassium bromide, wet feed, and later nux vomica. For two or three days horse could not eat. On second day he would drink if pail was placed up high enough to get his mouth under water. We then gave hay tea and gruel. He recovered in about two weeks; went back to work. Had another violent attack about a month later, and was killed without veterinary assistance.

Number two was a fine bay mare used on a four-horse stone team. Found her lying down motionless. Got her up and she refused to be led or turned, eyes staring, would not eat or drink, could not even move her from middle of barn floor. Bled, gave enemata, blistered poll, later gave hay tea containing fluid extract of jaborandi and potassium bromide. Made a good recovery and is still at work.

FRACTURE OF THE TIBIA IN A PARROT.

By THE SAME.

I send the following, hoping that some may see in it a lesson of patience rewarded.

November 19th, I was called to a parrot that had been in one family twelve years and in another eight. Its age was uncertain. Cage had fallen onto it, making a complete fracture at proximal extremity of tibia. Leg hung limp. Bird dealers laughed at idea of setting it. Whittled out sole leathers in shape of a knee or heel, conforming to shape of hock flexed. Bandaged, covering same with silicate of potash and dusted whole with aloin before the silicate had set.

Polly tasted, and in its moist condition did not suit her palate. November 22d, three days later, bandage was loosened at the knee (flexure of hock) due to Polly tearing at it. Set it again. There was already slight union. December 2d, ten days from last setting, bandage was well off. This time I applied gutta-percha, which staid no longer, but before it was wholly off Polly could use that leg as well as the other.

EXTRACTS FROM EXCHANGES.

GERMAN REVIEW.

BY W. V. BIESER, D.V.S.

INFLUENCE OF THYROID EXTRACT INJECTIONS UPON NUTRITION AND OBESITY.

Charrin and Roger by subcutaneous injections of 0.5 to 0.75 gms. of thyroid extract cause a remarkable degree of emaciation in animals. In a patient with general obesity, the bodily weight diminished from 133 to 115 kgs. in three months through the agency of injection and internal administration of thyroid extract. The treatment with thyroid extract (1 gm. per diem) was more energetically resorted to.

Emaciation set in only when the extract was resorted to, not during the periods of stoppage of the injection. The daily weight diminished 50 to 80 gms. After a certain point was reached, it was discovered that further emaciation could not be induced. In a second patient similar results were obtained. In a third, weight was uninfluenced by the injections. The difference in the results undoubtedly depends upon the difference in the kinds of obesity, upon the fact that in certain cases the preparation used has not always an unvarying composition, and upon the difference in the length of time and the treatment used.—*Thierarzt. Woch.*

. ANTISEPTIC AND COMPLETE IRRIGATION OF THE INTESTINAL TRACT.

Formerly the profession limited irrigation to the colon, not going beyond the valve of Baunhi. During the cholera epidemic in France, the small intestine was irrigated by means of a laparotomy and the insertion of a canula into the gut, through which the irrigation proceeded. Dauviac then tried to wash out the whole intestinal tract in a corpse by means of the rectum. He inserted an œsophageal tube into the rectum, connected this with an irrigator, and without

difficulty, injected 11 litres of water with a pressure of 80 cm. into the intestinal tract. The water flowed from the mouth. The experiment succeeded in animals. Some time afterward, the author treated a dog much emaciated as a result of a profuse diarrhœa. The whole intestinal tract was irrigated with a solution of lactic acid, 10 to 1000. The experiment succeeded, and 7 litres of the solution issued from the mouth.

The diarrhœa ceased. In the same way the author achieved success in uncontrollable diarrhœa of children, foetid diarrhœa in typhus, of icterus catarrhalis, etc.

In a patient suffering from emaciation and diarrhœa without any assignable causes, the irrigation brought to light an entire tænia. All disturbances ceased with the aid of antiseptics, the whole intestinal tract being rendered sterile. To prevent regurgitation of fluid, from the intestine into the irrigator, the author has constructed a special apparatus. *Thierarzt. Woch.*

NEPHRORRHAPY IN A DOG.

The presence of calculi in the pelvis of the kidney necessitated until now in human surgery the total extirpation of the affected organ.

This extirpation is necessary where too large and too numerous calculi have caused too great a structural change in the kidney substance proper. Cases of calculi in the pelvis of the kidney can occur, in which the kidneys are unchanged *per se*, in which cases extirpation is distinctly contraindicated; here, instead of extirpating the kidney itself, you enter the pelvis of the organ to remove the calculi.

This incision into the pelvis, simple as it is, gives rise too often to very dangerous fistulæ; hence, cutting through the whole length of the kidney substance, into the pelvis, and removing the calculus by this route appeals to one's judgment. Further, there is less hæmorrhage than one would expect in such a vascular organ as the kidney. The first operation of this kind, was performed by Prof. Lorge in 1890, with the assistance of the author, who operated successfully upon other dogs since. The animal is chloroformed, the flank shaved and disinfected.

In the angle included between the posterior border of the last rib, and the transverse process of the first lumbar vertebra, an incision is made through the skin, 7 to 10 cms. long according to the size of the animal.

The muscular layer is cut through, the peritoneum stripped away by the index finger, and the hand inserted between the peritoneum and the psoas muscles, without injuring the peritoneum—an extraperitoneal operation.

The kidneys are then grasped with the fingers, shelled out of their fatty capsule, and brought outside the wound. The kidney substance is then cut through and the pelvis irrigated, after the removal of the calculi; at the same time, the ureter may be irrigated to remove minute calculi, by forcing them into the bladder, whence they can be passed by the natural process. To check the bleeding, the cut-halves are merely lightly placed in apposition. The kidney is then replaced and the external wound closed. R. neither sewed up the kidney nor washed the edges of the kidney wound.

Autopsy, a few months later, showed the operated kidney to be normal in size and a cicatrized line at the site of the former incision.—*Thierarzt. Woch.*

HÆMORRHAGIC SEPTICÆMIA IN AN OX.

This disease is insidious in its onset, and when least expected often disappears. A few hours after its onset, the animal becomes prostrated, covered with cold sweat, respiration and pulse accelerated, temperature varying from 38.80° to 40° C. There is a hollow note on percussing the chest and cough weak and infrequent. During the treacherous course of the disease, œdema of the lungs and of the glottis at the base of the tongue sets in. Lesions at autopsy reminds one of pleuro-pneumonia. The lung tissue, instead of expanding under the influence of air inflations, is solid, inelastic and non-crepitating; the interlobular connective tissue is infiltrated with serum, fibrin and pus, and surrounds red or dark lobules of lung tissue.

These lesions, which have their site chiefly in the middle

of the lung, often attain the size of a man's head; if they approach the pleura or pericardium, pleuritis or pericarditis exudates and lesions are found. The subcutaneous connective tissue in the region of the neck is infiltrated with serum, also the mucous membranes of the mouth, œsophagus and larynx. Contents of the alimentary tract are often bloody; spleen normal; kidney tubules hæmorrhagic; uterus shows an œdematous swelling between the chorion and allantois coats.

The microscope reveals lesions of interstitial pneumonia and blood extravasation into the alveoli. The microbe cultivated in serum, milk and gelatin is inoculable in horses, pigs, guinea-pigs, rabbits, hens and doves.

Prof. G. includes this disease in the list of hæmorrhagic septicæmias. All curative efforts in checking the course of the disease were fruitless. Isolation, disinfection of infected stalls, killing of diseased animals, offer only a means of localizing or eradicating the scourge.—*Oest. Monatsch. fur Thier.*

SOCIETY MEETINGS.

CALIFORNIA VETERINARY MEDICAL ASSOCIATION.

The annual meeting of the California State Veterinary Medical Association was held in the lecture-rooms of the California Veterinary College, San Francisco, on December, 11th, 1895.

The meeting was called to order at 2 o'clock P.M., by the Secretary, Dr. R. A. Archibald, who stated that as the President and Vice-President were both unavoidably absent, it would be necessary to elect a President pro. tem.

Dr. H. A. Spencer, of San Jose, was unanimously chosen as President pro. tem.

The roll was called and the following members responded: Professors Skaife and Egan, Drs. Archibald, Spencer, Sr., Spencer, Jr., Pierce, Fabbi, Forrest, Maclay, Jackson, Hoggarty and Williams. Visitors: Professors Steers and Cunningham and the students of the California Veterinary College.

Professor Skaife, Dean of the Faculty of the California Veterinary College, tendered the Association a hearty welcome.

Minutes of previous meeting were read and approved.

The Secretary stated that it would be in order for the chair to appoint a committee as provided for in a resolution adopted June 12th, 1895. By request said resolution was read.

Moved and seconded that the motion whereby said resolution was adopted be rescinded. Carried.

The subject matter of said resolution was taken up and considered, and several amendments proposed.

Moved and seconded that a committee of one be appointed by the chair to make the required amendments. Carried.

The chair appointed Dr. Maclay as such committee, who reported as follows:

Mr. President:—Your special committee appointed to make required changes in resolution introduced on June 12th, 1895, begs to report that all of said changes have been made, and the resolution herewith returned.

On motion, the report of the committee was received, and the secretary requested to read the resolution as amended.

Here follows the amended resolution:

Whereas, The live-stock interests of this State are suffering from the malignant influences of contagious and infectious diseases, and

Whereas, The health of the public is also jeopardized by the presence of said contagious and infectious diseases which affect the domestic animals, and

Whereas, We, the members of the California State Veterinary Medical Association, realize that this state of affairs is due to the fact that there are no laws on the statute books of this State sufficiently adequate to control the ravages of these contagious and infectious diseases. Therefore, be it

Resolved, That the presiding officer of this meeting be and is hereby authorized and requested to appoint a committee of three members of this Association, whose duty it shall be to wait on, or communicate with the Governor of this State with a view of prevailing upon him to appoint a commission, to consist of two veterinarians, one physician, one attorney and one dairyman or stockraiser, who shall receive no compensation, and whose duty it shall be to devise ways and means whereby the public health and the live-stock interests of this State may best be protected from the ravages of contagious and infectious animal diseases, such as anthrax, tuberculosis, glanders, hog cholera, etc.

Moved and seconded that the resolution, as amended, be adopted. Carried.

The chair appointed Drs. Maclay, Skaife and Archibald a committee, as provided for in the foregoing resolution.

The Secretary read his annual report for the year ending Dec. 1st, 1895. On motion the report was received and ordered filed.

The Treasurer being absent, the hearing of his annual statement was postponed until the next quarterly meeting of the Association.

An application for membership from Prof. Steers, of the California Veterinary College, was read and referred to the Board of Examiners, with the request that said application be acted upon before the end of the present convention.

The chair stated that before proceeding with the election of officers it would be necessary to nominate some gentleman for the office of President; further, that nominations for all other offices were still open.

Dr. Maclay nominated Prof. Skaife. On motion, nominations for the office of President were declared closed.

Dr. H. Lemke being in nomination for Vice-President, and no further names appearing, the nominations were declared closed.

Dr. D. F. Fox being in nomination for Secretary and no further names appearing, nominations were declared closed.

Dr. F. E. Pierce being in nomination for Treasurer and no further names appearing, nominations were declared closed.

Drs. Maclay, Egan, Spencer, Sr., McCullum and Graham, being in nomination to form the Board of Examiners and no further names appearing, nominations were declared closed.

Dr. Pierce moved that, as there was but one nomination for each office, the Secretary be directed to cast the ballot for said officers. So ordered.

The ballot having been cast, the President pro. tem. announced the officers for the ensuing year as follows:

President, Prof. Skaife, San Francisco; Vice-President, Dr. H. Lemke, Bakersfield; Secretary, Dr. D. F. Fox, Sacramento; Treasurer, Dr. F. E. Pierce, Oakland; Board of Examiners, Drs. Maclay, Egan, Spencer, Sr., McCullum and Graham.

The newly elected President, Prof. Skaife, thanked the members for the honor conferred, and asked President pro. tem. Spencer to continue as Chairman for the remainder of the session, which Dr. Spencer, kindly consented to do.

The Secretary-elect, Dr. Fox, not being present, and Dr. Archibald having no desire to continue the duties as Secretary, Dr. Maclay was requested and consented to act as Secretary for the remainder of the session..

The subject matter of delinquencies for dues and assessments was then taken up and considered.

Dr. Egan moved that the Secretary be and is hereby instructed to notify all members of the amount of their arrearages ; also to inform said members that if said amount is not paid on or before the second Wednesday of March, 1896, that their names be referred to the Board of Directors with instructions to said Board to enforce Sec. 2 of Article VIII of the By-laws, which states that any member two years in arrears for dues or assessments shall have his name dropped from the roll of membership. Carried. The chair so ordered.

A very interesting paper was then read by Dr. H. F. Spencer, of San Jose, on "Stomatitis Pustulosa Contagiosa." A lively discussion followed the reading of the paper.

At 4:30 o'clock P. M., Dr. Maclay moved that the Association take a recess until 7:30 P. M. Carried.

At 7:30 o'clock P. M., the Association reassembled, President pro. tem. Spencer in the chair. Professor Skaife read a very excellent paper on "Physiology." The subject was handled in a very masterly manner by the essayist, and evoked a warm discussion, after which Dr. R. A. Archibald read a very learned and interesting paper on "Contraction of the Foot." This paper was accompanied by a large number of crayon drawings of the horse's foot in health and disease; also drawings of the various kinds of shoes for the relief of contraction. The essayist demonstrated that he had given the subject matter a great amount of study. Its reading was followed by a very interesting discussion, the majority of the members present taking part.

Moved and seconded that the thanks of the Association

be tendered to our worthy ex-Secretary, Dr. R. A. Archibald, for the very able manner in which he conducted the duties of his office during the past four years. Carried.

Then the report from Board of Examiners was presented as follows :

*"Mr. President :—*Your Board of Examiners, to whom was referred the application of Professor Steers, with instructions to report on same at this session of the Association, beg to report that we have had the same under consideration and herewith return the said application with the recommendation that said Professor Steers be elected to membership. Thos. Maclay, President."

Moved that the report be adopted. Carried.

Moved that Professor Steers be and is hereby elected to membership in this Association, and that the Secretary be and is hereby instructed to inform the gentleman of his election. Carried.

Professor Skaife offered the following: Inasmuch as Professor Cunningham, F.C.S., a member of the Faculty of the California Veterinary College, takes a very deep interest in the welfare and progress of the veterinary profession, I move that he be elected an honorary member of this Association. Carried.

Professor Cunningham being present thanked the members for the honor, and concluded his remarks by stating that he desired to make investigations of "Azoturia," and to that end requested the members to furnish him with small quantities of the urine passed by animals suffering from the affection.

Moved and seconded that the thanks of the Association be tendered to Professor Skaife, Dr. R. A. Archibald, and Dr. H. F. Spencer, for the very learned and interesting papers which they have favored us with at this session; further, that said gentlemen be, and are hereby requested to furnish the Secretary with their respective papers or copies of the same, and that when so furnished he is hereby directed to forward them to the veterinary journals of America. Motion carried and request made.

Moved by Dr. Maclay, seconded by Dr. Forrest. In the

matter of election of Dr. Creely, of San Francisco to membership in this Association, that inasmuch as the said Creely was elected in opposition to my wishes and report on his name, and as I am of the opinion that he cannot abide by the Code of Ethics as set forth in the By-Laws of this Association, and as he is well aware of his election to membership in this Association, and having so far failed to subscribe to the By-Laws, and being delinquent for his initiation fee and dues, I move that the Secretary be and is hereby instructed to refuse acceptance of any and all moneys in payment of said initiation and dues from the said Creely, also to refuse the said Creely permission to sign the By-Laws of this Association, and not to issue a certificate of membership to him; further, that all action of this Association in electing said Creely a member of this Association be hereby rescinded. So ordered.

Moved that the thanks of this Association be, and is hereby tendered the Faculty of the California Veterinary College for the use of this lecture hall and other privileges extended to us during this session. Carried.

Professor Skaife responded by stating that the Faculty earnestly hoped the Association would hold their next meeting in the same place.

Mr. Welch, on behalf of himself and fellow students of the California Veterinary College, thanked the Association for the privilege granted them during the session.

President Skaife announced that Drs. Price, Egan, and Jackson would read papers at the next meeting.

Moved that when we do adjourn we do so to meet on the second Wednesday in March, 1896, at California Veterinary College, San Francisco. Carried.

The chair announced that on the following day (Thursday, December 12), at 10 o'clock A. M., a clinical entertainment would be held at the college, conducted by Dr. R. A. Archibald.

On motion the Association adjourned.

THOMAS MACLAY, *Secretary pro. tem.*

MISSOURI VALLEY VETERINARY ASSOCIATION.

About forty members of the profession and friends attended

the seventh regular meeting of this Association at Kansas City, Mo., December 13, 1895, when a most interesting programme was fully carried out.

President Stewart called the meeting to order at 7 P.M.

After the roll-call and reading of the minutes of the previous meeting were adopted, the papers were read and each one discussed separately.

Dr. Harrison's paper being a report of a post-mortem examination of a black-jack. Many specimens shown, that indicated the cause of death beyond a doubt.

Dr. G. T. Netherton treated on "Purpura Hæmorrhagica in the Bovine Species."

Dr. L. M. Kluttz, "Fractures Complex, with Miracles;" also a case of protrusion of the bowels as the result of injury.

Dr. Chas. Saunders, "Care of Mares in Foal."

Dr. L. R. Brady, "Canine Distemper."

Dr. S. Stewart, "Meat Inspection."

All the papers were excellent, and showed great care in preparation, and were fully discussed, bringing out many valuable points.

In all respects it was an excellent meeting, and certainly all were greatly benefited by being present.

It is fully demonstrated that no one can afford to miss any meeting of the Missouri Valley Veterinary Association, and the interest is constantly increasing. The next regular meeting will be held in Kansas City, in February, 1896.

S. L. HUNTER, Secretary.

ONTARIO VETERINARY ASSOCIATION.

This Association, which is composed of duly qualified veterinary surgeons practicing in Canada and the United States, held its annual meeting in the Veterinary College, Toronto, on Dec. 21st.

Mr. G. L. Robson, V.S., the President, opened the meeting with a most excellent address, containing many points of interest and much food for thought.

After the usual routine business, the reading of the minutes

of the last meeting, secretary and registrar's reports, communications, etc., a discussion ensued, relating to the Act recently passed in the Provincial Legislature respecting veterinary surgeons, and a fine having been imposed under that act upon a person for falsely claiming the title, which fine should have been paid over to the funds of this Association.

The following new members were then duly elected: W. J. Morgan, V.S., F. G. Hutton, V.S., and J. Wagner, V.S.

Prof. S. Sisson, of the Ontario Veterinary College, read an excellent paper on "Undescended Testicle in the Horse."

In the discussion that followed, Mr. Quinn, V.S., who has had much experience in the castration of cryptorchids, warmly complimented Mr. Sisson on the excellence of his anatomical description of the condition existing.

Mr. A. Crowforth, V.S., read a very interesting paper on "Toxin and Antitoxin," in relation to the cause, cure, prevention and diagnosis of disease.

It was resolved that the Secretary be instructed to get new copies of the register printed, and to have incorporated in the pamphlet the act respecting veterinary surgeons recently passed, for distribution to members of the Association.

The following are the officers for the ensuing year: Prof. A. Smith, F.R.C.V.S., Honorary President; Mr. H. Hopkins, V.S., President; Major Lloyd, 1st Vice-President; Mr. S. Sisson, V.S., 2d Vice-President; Mr. Sweetapple, V.S., Secretary; Mr. W. Cowan, V.S., Treasurer. Directors: Messrs. J. Wende, W. J. Wilson, W. J. Morgan, J. F. Quinn, W. Steele, W. Gibb, A. Crowforth and W. Burns. Auditors: Messrs. C. Elliott and J. D. O'Neil. Delegates to the Western Fair Association: Messrs. J. H. Wilson and J. D. O'Neil. Delegates to the Industrial Exhibition Association, Toronto: Prof. A. Smith and Mr. H. Hopkins. Mr. N. Cowan was nominated to represent the Association at the Central Farmer's Institute, but he explained that it would be better for the veterinary surgeons practicing in the various localities to be placed on the lecturing staff.

THE MASSACHUSETTS VETERINARY ASSOCIATION.

A meeting of this association was held at 19 Boylston Place, Boston, on Wednesday evening 22d ult., when an interesting paper was read by Dr. Jno. M. Parker, President of the association, on "Milk as a Factor in the Propagation of Disease." A full account will be published in the March REVIEW.

MONTREAL VETERINARY MEDICAL ASSOCIATION.

The Montreal Veterinary Medical Association met in the library of the Faculty of Comparative Medicine and Veterinary Science, on Thursday evening, November 7, with the President, Dr. M. C. Baker in the chair. Drs. McEachran, Adami, Mills, and Martin were also present.

The minutes of the last meeting were read and approved. The Secretary was then instructed to convey the thanks of the members to Dr. F. H. Osgood, Chairman of the Massachusetts State Board of Cattle Commissioners, for the donation of fifty copies of the Report of the Board for 1895.

Dr. D. McEachran reported the addition to the library of Moller's Surgery, and also Vol. II. of Fleming's Surgery.

Mr. Thurston reported a case of obstruction in the thoracic portion of the œsophagus of a dog, due to the presence of a bone, with symptoms of gastro-intestinal irritation; the animal dying shortly after admission to the hospital.

The post mortem revealed an ulcerative condition and a perforation through the œsophageal tissues into the aorta, death being due to hæmorrhage into the stomach through this aperture. Dr. McEachran and Dr. Mills reported some similar cases from their own experiences.

Mr. Harri H. Dell presented a carefully prepared paper on "Pyæmia in the Dog,"* and illustrated his remarks by microscopic and macroscopic specimens from a case which recently came under his observation. In the discussion following, Dr. Adami congratulated the essayist on his contribution to our literature on the subject. He also referred to the experiments

* Published elsewhere in this number of the REVIEW.

of Councilman, which demonstrated the fact that pus can be produced by caustic substances without the intervention of pyogenic organisms.

Dr. McEachran gave some further remarks on the history of the disease, and instanced the occurrence of empyæma in a cow following mammitis.

Dr. Mills referred to the literary and scientific merit of the essay, and reported the occurrence of the disease in his own kennel.

Dr. Martin followed with very interesting remarks on the pathology of pyæma and septicæmia.

The essayists for the next meeting were then appointed, and the meeting adjourned.

HARRI H. DELL, *Sec. Treas.*

STATE BOARD OF VETERINARY MEDICAL EXAMINERS.

The State Board of Veterinary Medical Examiners, of Pennsylvania, was convened at Harrisburg at 12 M., on November 13, in accordance with a call issued by the Secretary of the Commonwealth. The Board being duly sworn into office by the Department of State, Dr. W. Horace Hoskins was made temporary chairman, and Dr. S. J. J. Harger secretary pro tem. All the members of the Board were present.

The first order of business being election of permanent officers, Dr. S. J. J. Harger was nominated for President by Dr. Harry Walters, and Dr. W. Horace Hoskins for Secretary by Dr. J. C. McNeil. No other names being placed, the election was made by acclamation, upon which the officers assumed their respective places.

The question of adopting suitable by-laws for the government of the Board was taken up for consideration, and after considerable discussion on the subject, a motion was made that the chair appoint a committee of three to prepare suitable rules to be submitted to the entire Board for adoption at the next meeting, and that they also draft a suitable form of license to be presented at the same time.

The Secretary was instructed on motion to procure a minute-book and a suitable registration book.

Deputy Secretary Burnett was then asked to inform the

Board as to the intent of the act so far as placing on the seal of the State, and the Board was informed that all licenses would have to be returned to the Department of State at Harrisburg to receive there the seal of the Commonwealth.

It was also suggested to the Committee on Rules and By-Laws that the officers be elected annually. It was also decided that two regular meetings be held each year in the latter part of April and June, with such other meetings as the business of the Board might demand.

The subjects for examination were assigned as follows: Anatomy, Veterinary Diagnosis and Zootechnics, Dr. S. J. J. Harger; Practice of Medicine, Dr. W. Horace Hoskins; Obstetrics, Meat and Milk Inspection and Sanitary Medicine, Dr. J. W. Sallade; Surgery and Physiology, Dr. Harry Walters; Pathology, Chemistry, Materia Medica and Therapeutics, Dr. J. C. McNeil. The age of the applicants, their normal character and genuineness of their diplomas, were placed in the hands of the Secretary.

It was also decided that a list of fifteen questions on each branch would be submitted to the applicants, from which they should select ten for answering. Applicant shall draw one from a box of cards with numbers upon them, upon which he shall write his name and place the same in a sealed envelope, and shall designate his answers to the questions on the various subjects by the same number. This card shall be placed in the keeping of the Secretary. It was decided that a general average of 65 per cent. shall have been attained, and that a minimum of 50 per cent. must be attained on each branch.

It was moved and seconded that the April meeting shall convene for two days. It was decided that the first regular meeting of the Board for examination of applicants for license shall convene on the third Monday in December at the office of the Secretary, 3452 Ludlow Street, Philadelphia, Pa., and that notices of the same be sent to the veterinary journals of North America.

The Chairman then appointed the following Committee on Rules and By-Laws: Dr. W. Horace Hoskins, Chairman; Dr. J. W. Sallade and Dr. Harry Walters, after which a motion to adjourn prevailed.

W. HORACE HOSKINS, *Secretary*.

ONTARIO VETERINARY COLLEGE.

This institution held its Christmas examinations on Dec. 20th. The usual Board of Examiners, which is composed of practicing veterinary surgeons, officiated. The following gentlemen, after being subjected to a rigid examination, were awarded graduation diplomas:

Donald Currie, Stayner; Francis Duncan, Unionville; John M. Farquhar, Greenock, Scotland; Truman Farl Gore, Clarksburgh, W. Va., U. S.; Cecil Howell, London, Ont.; John S. Jones, Poland, N. Y.; R. L. Kann, Lisburn, Pa.; Archie A. McArthur, Stayner; Allan McDonald, Erin; Angus McDonald, Teeswater; John J. McGregor, Carleton Place; Arthur E. Miller, Myersville, Ohio; James H. Powers, Providence, R. I.; David D. Reed, Teeswater; William J. Rouse, Mitchell Square; Daniel Henry Super, Warrensville, Pa.; Jacob W. Wagner, Tavistock; E. C. Wisman, Bryan, Ohio.

Primary Examination, Anatomy.—Geo. Hamilton Leslie.

BIBLIOGRAPHY.

PATHOLOGIE INTERNE DES ANIMAUX DOMESTIQUES—(Internal Pathology of Domestic Animals.)—By C. Cadeac, professor at the Veterinary School of Lyons. I. *Diseases of the Digestive Apparatus*. The first of sixteen volumes, with 478 pages and 16 plates. This volume is part of the *Veterinary Encyclopedia*.

A work of the internal pathology of the domestic animals was much wanted, and after ten years of careful gathering of important material, Mr. Cadeac made of the whole minute selections, which form the basis of his new work. Convinced adept of the microbian theory, he inspired himself of the work of Pasteur and of his students in the arrangement and adaptation of the material he had collected.

He studies the diseases by apparatus; each organ forming a chapter, each containing a series of articles which cover the history of all the ailments that this organ may be subject to. The order of classification adopted for all the diseases is the anatomical order.

This volume treats of the DIGESTIVE APPARATUS. In the first chapter the *mouth* is treated (stomatitis, glossitis, paralysis of the tongue). The second considers the *parotid gland*

(parotiditis, calculi, fistula, etc.) The third studies the *maxillary* and the *lingual* salivary glands. The *pharynx* covers the fourth chapter. The fifth occupies the *guttural pouches*. In the sixth we find œsophagitis, dilatation, structure, obliteration, rupture, etc., as diseases met with in the *œsophagus*, though a special chapter is given to jabot. The three following chapters are considering the diseases of the three first compartments of the stomach of ruminants (rumen, reticulum, omasum). The eleventh chapter treats of *stomach* (gastritis, ulceration, dilatation, laceration, twisting, indigestion, etc.)

This first part forms a very important addition to the series of the so neatly published encyclopedia of the house J. B. Bailliere & fils, 19 rue Hautefeuille, Paris.

THE DOG, IN HEALTH AND IN DISEASE.—By Wesley Mills, M.A., MD., D.V.S., etc. Second edition, revised and enlarged. D. Appleton & Co., New York.

The number of editions a book is published does not always indicate its value, but this thought cannot apply to this second edition of *Dog, in Health and in Disease*. It is but a few years since we were able to welcome the first edition, and it is with pleasure that we welcome the second—so well said to be revised and enlarged, and with an increase in the illustrations, colored plates, wood cuts, etc.

The general plan adopted by the author in the original book has been kept up in this, and before considering abnormal or diseased condition, a general opportunity to study dogs in their normal state is given. The additions made in the book will be found advantageous; the glossary of terms in common use by dog fanciers will prove useful.

Altogether, it is quite certain that Dr. Mills will find that this edition will receive, at the hands of the profession, as kind reception as the first.

THE VETERINARIANS' CALL-BOOK (Perpetual): A visiting list, which can be commenced at any time and used until full, containing much useful information for the student and busy practitioner. By Roscoe R. Bell, D.V.S., Professor of Materia Medica, Therapeutics and Hygiene in the American Veterinary College, New York.

After a dormant period of eight months, in which this useful little book has been entangled in the affairs of the de-

funct publishing house of Sabiston, Murray & Co., it emerges in a much improved condition, having been secured by W. R. Jenkins, 48th Street and 6th Avenue, New York, who is prepared to fill all orders for it. The inquiry for it during the past fall and summer guarantees for it a large popularity in its improved form.

ARCHIVES DES SCIENCES BIOLOGIQUES—(Archives of Biological Sciences). Imperial Institute, St. Petersburg.

The first part of Vol. IV has been received, and it contains several articles of unusual interest, such as "the use of parachlorophenol as curative agent in local tuberculous affections," upon "the sensibility of animals to the toxine of glanders," etc.

At the beginning the *Archives* were published in Russian and in French in one number. Now this issue is made double, one in each language. It is one of the best and of the finest scientific publications of Continental Europe.

COMTES RENDUS DES TRAVAUX DE L'ECOLE VETERINAIRE DE KHARKOW—(Russia.) (Record of the Exercises of the Veterinary School of Kharkow), for the years 1891 to 1894.

A volume of some six hundred pages, with illustrations, relating many of the investigations and experiments, made by the staff of the school of Kharkow.

SANITARY FACTS.

TUBERCULOSIS IN COLORADO.—The subject of the presence of this disease in Colorado, its nature, contagiousness, dangers to human life and the live-stock interest of the State has given rise to considerable discussion. Dr. C. Denison and Dr. Gresswell, State Veterinarians, have published interesting interviews, in the daily papers of Denver, on this important question.

HOG CHOLERA IN IOWA.—The State Board of Health Bulletin for December reports hog cholera as most prevalent in many parts of the State.

SANITARY MEASURES IN TENNESSEE.—In the Bulletin of

the State Board of Health is published an address before the Farmers' Convention, by Prof. M. L. Copelin, M.D., where, after considering some of the diseases contagious to men and animals, he says, "to whom are you to look for this protection. To such men, having special training, must be entrusted the sanitary protection of herds, and upon you devolves the duty of support, both moral and financial." A proper recognition of the veterinarian's calling.

CORRESPONDENCE.

PRACTICE OF VETERINARY MEDICINE IN MARYLAND.

BALTIMORE, Dec. 13, 1895.

Editor American Veterinary Review:

DEAR SIR:—Judge Dennis, of Superior Court, has decided the law protecting veterinary practice in Maryland to be constitutional in the case of State vs. J. C. Sigmund. Dr. Sigmund holds a diploma issued since January 1st, 1895, by a two-year school. As the minimum fine is \$100, a stet was entered by the prosecuting attorney, upon agreement of all concerned, after the decision of the court favorable to the Board had been recorded. This was done upon recommendation of the Board, as it was not desired to impose a penalty in this, a test case.

Yours truly,

A. W. CLEMENT, Sec.

UNITED STATES VETRINARY MEDICAL ASSOCIATION.

PHILADELPHIA, JAN. 4th, 1896.

Editor American Veterinary Review:

DEAR SIR:—Thinking that you would be desirous of having the following information for publication in your columns in connection with the U. S. V. M. A., I take pleasure in submitting it to you for approval.

The following named members of the Association have accepted places on the Comitia Minora for the ensuing year: W. L. Williams, Chairman; Leonard Pearson, Nelson P. Hinkley, Thos. B. Rayner, T. J. Turner, D. E. Salmon and L. H. Howard.

The following gentlemen have accepted positions as Assistant State Secretaries: Arizona, D. LeMay; Arkansas, R. R. Dinwiddie; Kansas, N. S. Mayo; Massachusetts, Madison Bunker; Minnesota, M. H. Reynolds; Montana, W. L. Williams; Missouri, J. M. Phillips; North Dakota, T. D. Hinebaugh; Pennsylvania, W. L. Rhoads; Tennessee, J. W. Schiebler.

The Army Legislative Committee as follows: J. P. Turner, Chairman; Jno. R. Hart and F. H. Mackie.

The other Committees are in process of completion and notice will be sent you in due time.

Vote has been taken upon the place of meeting for 1896, Buffalo and Nashville asking for this recognition, and Buffalo has won; therefore, the meeting goes to New York State in September, 1896, and will convene for three days, namely, the 1st, 2d and 3d.

Very truly yours,

W. HORACE HOSKINS, *President.*

PERSONAL.

WE are credibly informed that Prof. R. S. Huidekoper, the talented editor of the *Journal of Comparative Medicine*, professor of anatomy at the New York College of Veterinary Surgeons, and President of the New York County Veterinary Medical Association, has in contemplation a removal from the present scenes of his activity to the Old Dominion, where he is to assume the directorship of a large breeding establishment.

JOHN DORIS, Jr., D.V.S., graduate of Ohio Veterinary College, has resigned his position as Veterinary Inspector, Bureau of Animal Industry, United States Department of Agriculture.

Prof. LEONARD PEARSON, of the Veterinary Department of the University of Pennsylvania, has received the appointment of State Veterinarian of Pennsylvania.

OBITUARY.

The death of Dr. W. W. Custer, of Reading, Pa., is announced as having taken place on Dec. 1st, 1895.

REVIEWS WANTED.

Any one having double copy of the August number, '95, will oblige the Editor by sending the same to the office of the REVIEW.

NEWS AND ITEMS.

QUALIFICATIONS OF VETERINARIANS.—A somewhat peculiar case has just been decided by the supreme court of Michigan, which will be of much interest to such owners of horses as have been victimized by quacks, who professed to have the necessary skill to treat intelligently diseases of the horse. The facts in the case briefly stated, are these: The plaintiff was called in to treat the defendant's horse, which, however, received no benefit from the treatment, and when the bill for services, amounting to three dollars and fifty cents, was rendered the defendant refused to pay it. The alleged veterinarian then entered suit in justice court, and, after the jury had disagreed in the first trial of the case, secured a verdict in the second. From this verdict the defendant appealed to the circuit court, in which two trials were also had, the second resulting in favor of the defendant. The plaintiff, whose name is Conkey, then appealed the case to the supreme court, and the opinion handed down in the case is well worth perusal by those whose business necessitates the periodical resort to veterinary skill. Without doubt the carrying of a suit in which the sum of three dollars and fifty cents only was at issue from the justice court to the circuit court, and from there to the supreme court, was an expensive proceeding to the parties involved, but outsiders may profit richly by it without cost to themselves. The opinion of the supreme court is lengthy and well digested, and sustains the circuit judge in the following postulate: "The plaintiff, by

holding himself out as a veterinary surgeon, contracted to be possessed of the necessary skill and learning, and it devolved upon him to show, by a preponderance of the evidence, that he had acquired and possessed the necessary skill and learning to practice intelligently and usefully the profession to which he claims to belong." The court goes on to state that the well defined principle of law, "a physician or dentist undertakes in law to supplement his reasonable care and honest endeavors with ordinary professional skill," applies as well to the veterinary surgeon, and that there is no presumption of qualification. The plaintiff in the case in point admitted he had never studied veterinary medicine except once during a period of six months when he was incarcerated in the State penitentiary at Ionia. "We are not aware," concludes the opinion, "that it is a part of the punishment inflicted on the convicts in that institution to study veterinary medicine, nor that a library is furnished them for that purpose. The plaintiff's education and experience were peculiarly within his own knowledge. It was incumbent on him to prove them, not upon the defendant to disprove them. His further testimony that he had been engaged in the business of a veterinary surgeon for sixteen years did not, it would seem, establish his qualification. When a professional man sues for services it is necessary for him to prove his qualifications by showing his admission to practice under the statute, his graduation from some reputable college or school, or his study and experience if his right to practice is not otherwise regulated. If the plaintiff was simply a quack, without education or experience, and was employed by the defendant upon the representation that he was a qualified veterinary surgeon he could not recover." This is the first decision on this specific point of which *The Horseman* has knowledge, and that it should have been rendered in a suit involving only the paltry sum of three dollars and fifty cents is practically inexplicable. The fact, however, remains that the supreme court of Michigan has held in good set terms that a quack can not recover for worthless services rendered. The effect of the decision is even more far-reaching. If a quack can not recover for services that do not result favorably he can not recover for services that may tend toward the saving of a valuable horse's life. In short, under this decision no owner of horses who is imposed on by a quack veterinarian need pay him a cent, and in the case of a suit being brought it will be necessary for the quack to prove his claims to being considered a veterinary surgeon in the true meaning of that term.—*The Chicago Horseman*.

AMERICAN VETERINARY REVIEW.

MARCH, 1896.

EDITORIAL.

THE UNITED STATES VETERINARY MEDICAL ASSOCIATION AND HER NEXT CALLING.—The United States Veterinary Medical Association has for the last few years assumed a position to which her national organization has given her a certain amount of claim in relation to the elevation of American veterinary science, and to the advancement of education in our veterinary colleges.

Through her energy, the changes made in many of our schools, from two to three years' studies, have marked a great step in her history; through the repeated suggestions made at her meetings, it is certain that the laws regulating the practice of our art owe much of the realization of the wishes expressed by the creation of Boards of Examiners in some of our States, and much can be expected from the good intentions and work of the society born from her—the Association of the Faculties of Veterinary Colleges of North America. For all of which, we believe the REVIEW can claim the greater part of the credit in their realization, as by her efforts and by *our special and repeated callings* these improvements have little by little been realized.

At the Chicago meeting in 1894, in a paper that was read on "Veterinary Education," among the suggestions made there was one asking for the creation in the United States of a National Board of Examiners—a suggestion which was dropped on account, it was stated, of the impossibility of such an organization because of the fact that State laws could not be ignored, and therefore a national board could not be created.

The author of the paper, a foreigner, who was probably not very well acquainted with the laws of this country, seemed

to realize the strength of the argument and did not insist on his suggestion, but urged the creation of local State Boards. The result is well-known to-day :—New York, Pennsylvania, Maryland and other States have since seen these Boards appointed; but, if previous to this new departure, a National Board of Examiners was not possible, it seems that to-day the difficulty exists no longer.

The step is going to take place in human medicine—why should veterinary science remain behind?

As evidence of this fact, we extract from the *Medical Record* the following editorial:

CONFEDERATION OF STATE MEDICAL EXAMINING BOARDS.

In the December number of the *Bulletin of the American Academy of Medicine*, there is published the report of a committee appointed to arrange for the organization of the State Medical Examining and Licensing Boards of this country. The report is signed by Drs. McIntyre, Watson, Paine, and Potter. It states that since the system of State Medical Licensing had been adopted so extensively, and since it is probable that a similar system would soon be adopted in all the States of the Union, it is necessary that the Examining Boards of different States should take measures for approximating, as nearly as possible, uniformity as to rating and standards of acquirements. For this purpose, a plan of organization is drawn up, consisting of a constitution, embodying nine articles. It is provided that the body shall be known as the National Confederation of State Medical Examining and Licensing Boards. The objects of this organization will be to have regular conferences of the members, the collection, compilation, and dissemination of information regarding State Licenses, and, if desirable, the adoption of regulations for guiding the work of the confederated boards. The work of the confederated boards will be largely advisory, but such work will be much needed, and we trust that the proposed organization will be successfully accomplished.

As an addition to all the good work done by the United States Veterinary Medical Association, we would suggest that our proposal made at Chicago should be taken up again by her, with the modifications that are presented to-day, and offered to us in working for the organization of a *Confederation of State Veterinary Examining Boards* similar to that which is now organized by our sister profession.

AN EXPLANATION.—The following paragraph appeared in the February *Journal of Comparative Medicine*:

We learn that Prof. Liautard intends to examine the students in anatomy the latter part of January, after which he sails for France for an indefinite stay. Prof. R. R. Bell is to take his place.

Prof. Liautard did sail for France, having completed his course of lectures for the session; but his stay in France is not to be indefinite; he has simply gone to bring Mme. Liautard to America, she having been spending the winter with relatives in Paris, and their return is shortly expected. Neither has Professor Bell assumed the functions of the Dean of the American Veterinary College, Professor Coates having been elected to act in that capacity until Dr. Liautard's return. Dr. Bell, however, will, at the beginning of Volume XX (April), assume joint control of the REVIEW with Dr. Liautard. It is expected that this acquisition will be greatly to the advantage of this journal, as he has had a large experience in literary and journalistic life.

CONDITION OF VETERINARY LEGISLATION IN NEW YORK STATE.—Scarcely ever has the adage "eternal vigilance is the price of liberty" proven more exact in its application than occurs in relation to veterinary legislation in this State. If the legislative committees of our veterinary medical associations were not constantly on the alert for the appearance of new amendments to our hard-earned laws, the original framers of the statutes would not in a short time be able to recognize the fruits of their own labors. Every little while some obscure member of the State Assembly, to gratify one or more of his constituents, introduces into that body some act which, under various disguises, seeks and often becomes a State law. And, while disinterested members are careless and allow them to pass, the father of the bill gets a little cheap notoriety for his smartness, and the thanks of the beneficiary—it matters not that the evil there sown will be more far-reaching and disastrous than can be counterbalanced by a decade of wise legislation. It is hard to explain upon satisfactory lines the composition of a Member of Assembly who would have the effrontery to perform such a service for the plaudits of such a constituency against the interests and the very life of so vast and honorable a body of men as constitute the legal veterinary profession of New York State. Yet this was done on January 16th, by Mr. C. C. Cole, in the New

York Assembly, as may be seen by the following, known as "House Bill No. 249:"

AN ACT TO AMEND THE PUBLIC HEALTH LAW RELATING TO THE PRACTICE OF VETERINARY MEDICINE.

The People of the State of New York, represented in Senate and Assembly, do enact as follows :

§ 1. Section one hundred and seventy-one of article ten of the public health law, being six hundred and sixty-one of the laws of eighteen hundred and ninety-three, as amended by chapter eight hundred and sixty of the laws of eighteen hundred and ninety-five is hereby amended to read as follows :

§ 171. Qualifications for practice.—No person shall practice veterinary medicine after September first, eighteen hundred and ninety-six, unless previously registered and legally authorized, unless licensed by the regents and registered as required by this article ; nor shall any person practice veterinary medicine who has ever been convicted of a felony by any court, or whose authority to practice is suspended or revoked by the regents on recommendation of a State board.

§ 2. Sections one hundred and eighty, one hundred and eighty-one, one hundred and eighty-two, one hundred and eighty-three and one hundred and eighty-four of article ten of the public health law, as added by such chapter eight hundred and sixty of the laws of eighteen hundred and ninety-five, are hereby renumbered and shall hereafter be designated respectively as sections one hundred and seventy-nine-a, one hundred and seventy-nine-b, one hundred and seventy-nine-c, one hundred and seventy-nine-d, and one hundred and seventy-nine-e.

§ 3. This act shall take effect immediately.

We will not here review at any length the history of the bill to which this is an amendment, further than to say that registration was first made obligatory in this State in 1886, and after keeping the books open for that purpose for a sufficient time to allow all qualified men to register, were closed in every county of the State ; but they were reopened by amendment at various times since through just such legislation as is now attempted. In 1893 the Albany law makers refused to pass an amendment to again throw the books open for promiscuous registration ; and veterinarians throughout the State rejoiced that the end of such practices had arrived. Following upon this evidence of good faith on the part of the State, the profession showed its appreciation of their action by enforcing more stringent obligations upon its own members, placing their colleges and future members in the custody of the Regents, entailing one more year's attendance and greater proficiency in the prospective student, in the very face of unprecedented national financial and commercial depression, thus

exposing our institutions of veterinary learning to great loss and sacrifice by virtue of decreased attendance.

It was not possible, under these circumstances, to have presumed that a man—if he were only casually acquainted with this brief history—and application to any member of the profession in good standing would have enlightened him—could have been found within the borders of this commonwealth who would be willing to be considered such an enemy to human progress as to allow his name to appear as father of such an act. That such a person was found simply proves that men can be secured to do any act, if within the narrow letter of the law, and without the pale of every sentiment of honor and morality.

Through the good offices of the Legislative Committee of the New York County Veterinary Medical Association, and especially of its indefatigable chairman, Dr. Arthur O'Shea, this infamous measure is at this writing apparently defeated. Dr. O'Shea not only at once repaired to the State Capital, and, with the other members of the committee, appeared before the Public Health Committee of the Assembly in opposition, but instigated a large number of metropolitan veterinarians to express their personal protests in writing to the chairman of that committee. The writer of this article did what he could from this standpoint; stirred by a righteous indignation, his communication to the chairman was as forcible as his humble ability could inspire, and we personally know many others who were equally enthusiastic in their expressions of opinion. Dr. O'Shea informs us that the committee were simply overwhelmed by the avalanche of opposition from the veterinary profession of the State. That was as it should be, and there can be no doubt as to the final outcome.

In the January REVIEW we brought to the notice of the profession an unfortunate condition of the bill exempting the legally qualified veterinary surgeons of New York State from service upon juries, whereby a clause in one of the amendments made the bill operative throughout the State with the exception of New York and Kings Counties, whose busy practitioners were still liable to summons. Dr. O'Shea, who had charge of the bill, immediately set about to rectify this

injustice, and has had a bill introduced in both the Senate and Assembly, which were referred to the Committee on Codes. The following is a copy of the amended section :

2. A practicing physician, surgeon or dentist, having patients requiring his daily professional attention, not following any other calling ; a licensed pharmacist or pharmacist, while actually engaged in his profession as a means of livelihood ; and a duly registered veterinary surgeon actually engaged in his profession as a means of livelihood.

§ 2. This act shall take effect immediately.

This bill, when passed, and there can be no question of this, as it is manifest injustice, will have to receive the sanction of the executive heads of the cities of New York and Brooklyn to conform with special legislation.

Altogether, the profession of the State has reason for congratulation upon the condition of legislative affairs, and it is greatly indebted to those who so willingly have given their time, energy, and money for the common weal.

IN calling attention to the new frost shoes of Dr. Dougherty, we hope they will be tried by those who are practicing in districts where wintry weather obliges the use of specially made shoes for horses. We have had no opportunity to test them, but we hear they have given much satisfaction to those who have.

A CORRECTION.—On page 602 of the December issue, the State Veterinary Department of Iowa is made to have come to the conclusion that tuberculosis was not contagious. This is an error ; it should read : “ The conclusion was that the disease is usually not inherited.”

THE VETERINARY HERALD.—We welcome the first number of this neat little periodical, edited and published by the students of the Chicago Veterinary College, with assistance from the faculty. It is well gotten up, and we trust it will have a long life.

“ HOW GOLDEN-RODS MAY BE POISONOUS,” is the title of a paper by Prof. H. H. Rusby, Professor of Botany at the American Veterinary College, which will appear in the April REVIEW.

ORIGINAL ARTICLES.

HEART DISEASE.

By J. A. COUTURE, V.S., Quebec.

Specially Written for the AMERICAN VETERINARY REVIEW.

CASE III.—PERICARDITIS IN A COW—DEATH.

The readers of the REVIEW may still bear in mind the caution that was given them in the November number, both by Dr. Dalrymple and myself, with regard to the diagnosis of heart diseases in the horse on account of their liability, if the practitioner is not always on his guard, to be mistaken for pulmonary diseases. The same caution has to be given with regard to heart disease in cattle, but the mistake will bear either on the digestive organs or on the pulmonary organs. And heart disease in these animals being a great deal less frequent than in the horse; on the other hand, diseases of the digestive organs being very common, the practitioner is sure to be misled and make a false diagnosis when the disease is at the outset. When one meets a class of disease every day, or almost every day, one becomes so expert in the matter that at length diagnosis is made instantaneously. Such is the case with us with regard to heart diseases in the horse, but it is an entirely different matter with regard to these diseases in cattle, which are only met with at long, very long intervals.

The case which is to be reported, besides being interesting for many reasons, will illustrate this remark:

History of the case.—I was called, on April 27, 1894, to see a young Ayrshire cow, four years old, having had her second calf about two months previously. A few days after calving, she had to walk thirteen miles to come to Quebec, where she had been sold to the Sellery convent. The day following her arrival she was noticed to breathe frequently; the seller's attention was called to this fact, but he said that it was nervousness. She gave from eight to twelve quarts of milk, and was considered to be a fairly good cow, but she was affected now and then with shivering and loss of appetite. These slight

attacks of disease did not necessitate the veterinarian's services, but the cow was looked upon as being of a delicate constitution. April 25th (two days before being put under my care), she refused her food, breathed frequently, moaned, extremities cold, the secretion of milk had ceased. Such was the information that was given to me when I made my first visit.

Clinical examination.—Temperature $105\frac{1}{2}^{\circ}$; respiration 30° ; pulse hard, strong, small, 80 per minute; the patient moaned at every expiration; rumen completely inactive, distended and sore; she moved about with difficulty; constipation. Acute disease of the lungs was at once suspected, and the chest was carefully auscultated in view of pulmonary disease only, and the heart was neglected. That was a mistake; that organ should have been as thoroughly auscultated as the lungs, and the true nature of the disease might have been discovered then and there. Nothing abnormal was heard in either lung, of course, and my attention was brought to the digestive organs. The inactivity of the rumen, its distention, the moans, the constipated state of the bowels, led me to think that it might be *gastritis, with a doubtful prognosis*. A suitable treatment was prescribed, diet to consist of a small quantity of hay only.

April 28th, the next day, the temperature was 107° , pulse 90, respiration 40, rumen still inactive. Auscultation of the chest for lung disease, negative. The same treatment was continued, and an oleaginous purgative was given.

April 29, temperature 105° , pulse 80, respiration 40; rumen began to act a little, the intestines purging. I thought that my patient was better—the appetite was improving, the movements were more easy, the eyes brighter. But the pulse and respiration were no better.

April 30, after examining my patient, I thought she was much better. The temperature 101° , pulse 70, respiration 30. The rumen had two fairly strong revolutions per minute; rumination fairly good; appetite improving. The sedatives were discontinued, the cooling mixture (alkaline) kept up. Diet—hay and small bran mashes. I considered the animal

convalescent, and believed that with care in feeding the cure would be complete in a few days. The fact is, there was no improvement at all in the condition of my patient, and that the decrease of the fever and of the pain, the better appetite, were due to the commencement of the exudative process. Such apparent improvement is always present in all inflammations of the serous membranes when exudation begins. Medical attendance was discontinued. Four days after, I was called by telephone and informed that my patient was much worse, that she was swelled at the neck and chest. I was at once fixed upon the nature of the disease, and I knew that I had all the while treated a case of pericarditis for one of gastritis.

I hastened to see the cow, and found her in a pitiful state, temperature 105° , respiration 60, pulse small and weak, 90; large swelling of the posterior half of the neck, the chest, between the fore legs. The heart was auscultated on both sides, but its beatings could not be heard. Respiratory murmur present and rather strong in both lungs. The diagnosis is now easily made and told to the owners: *pericarditis*, probably caused by a traumatism, with fatal results. I advised slaughtering.

May 14.—Eleven days passed without any news of the case, when, on May 14, I was informed by telephone that the cow was going to be slaughtered, and asked if I would like to make the autopsy. Since my last visit she had grown gradually worse; the swelling invaded all the neck, the throat, chest, belly, sides as high up as the superior third of the ribs. Hardly any food had been taken during the last eight or nine days; she was reduced to the state of a skeleton.

Autopsy.—Large quantity of serous liquid under the skin covering the swelled parts and in the tissues of these parts; abdomen contained about fifteen gallons of a yellowish liquid, the organs contained in that cavity were almost bloodless, otherwise sound. The chest contained about ten gallons of this serous liquid. The pericardium was yellowish-white, a quarter of an inch thick, contained about one gallon of a thick, white, purulent liquid. The heart was atrophied to about half its

normal size, hard, of a grayish white color, and had the appearance of a mass of tallow; its cavities were much reduced in size, the valves were thickened, endocardium thickened, grayish white. I shall never forget my stupefaction when I looked into that chest. *Oh! but where were the lungs of that animal?* The fact was that there were no lungs to be seen at first. The chest being opened, showed a mass of liquid, which, evacuated, showed the heart and pericardium in the state above described, but no lungs could be seen for the following reason: Inflammation had invaded the whole pleura, which presented the same appearance as the pericardium; it was thickened as the latter, and was completely adherent to the sides and diaphragm, so that the lungs were imprisoned in it and firmly stuck to the ribs; it was only after having dissected the pleura from the sides that they could be seen, compressed and congested. No trace of foreign body could be found, though the researches were long and carefully made.

This case is remarkable for the length of time it lasted (17 days), and is interesting inasmuch as it shows the resemblance at its outset with gastritis and pulmonary, or, rather, respiratory organs. It may tend to caution practitioners to be exceedingly careful in their examination of patients supposed to be suffering with these diseases.

THE USE OF ANÆSTHETICS IN VETERINARY PRACTICE.

By G. W. BUTLER, V.S., Circleville, O.

A Paper read before the Ohio Veterinary Medical Association at Columbus.

It is not my desire to-day to tire you with an exhaustive paper dealing with anæsthetics from a theoretical standpoint.

The history of the discovery of the different agents that are used to produce anæsthesia, the modes of preparing them, etc., can be studied, if we wish to do so, from our text-books, and, in my opinion, it is not in good taste to read lengthy theoretical articles at our meetings, for, at the best, they can only be a repetition of what we all have an opportunity of reading at home. To be sure, if we should discover something of importance pertaining to our profession, we should,

by all means, repeat it. What I have to say will in part apply to my own experience in the use of anæsthetics; and I shall also act the part of a supplicant in behalf of our dumb patients.

Notwithstanding the wonderful progress that has been made in veterinary science during the last two or three decades, as is shown by the extensive study of bacteriology and its application to general practice, and the improvement of our profession from a social standpoint, yet I fear there are far too many of our graduated veterinarians of to-day who do not use anæsthetics even when performing the most painful and prolonged operations.

The veterinarian, above all others, should be humane; and it appears to me that if he does not exercise every power to make the necessary operations painless, he is not doing his duty as a man, nor conducting himself in a manner befitting our noble profession.

What is more repulsive to a sympathetic, kind-hearted person, than to see a horse tied in such a manner that he is forced to submit to the most cruel operations upon the most sensitive structures while in a conscious condition?

The removal of diseased eyes; operations involving the sensitive parts of the foot; firing exostoses and tendons with red-hot irons; making extensive incisions in operations for fistulous withers and poll evil; spaying of bitches, and dozens of other painful operations, which occasionally take an hour or more to perform, done without an anæsthetic.

These are acts of barbarism, and should have no place in progressive veterinary science; and until we cease to think lightly of these things, we should be a little slow in applying the term quack and empiric to practitioners who have not had the advantage of a college education. There are several factors which no doubt tend to prevent the more general use of anæsthetics in veterinary practice. Judging from what has been written by some authors, the use of anæsthetics in veterinary practice is attended with a great deal of danger. Finlay Dun, in his work on "Veterinary Medicines," states that chloroform anæsthesia is attended with more risks in vet-

erinary practice than in human patients. The same author speaks of horses dying from respiratory and cardiac arrest after having been anæsthetized with chloroform, as if it were *not* an uncommon occurrence.

From what others, who have had an extensive experience, have written, and from my own experience, I am inclined to think that such unsatisfactory results have very often been due either to carelessness or to a lack of knowledge of the proper mode of administration on the part of the anæsthetist. Many contend that chloroform is too expensive to use in general operations, and that it cannot be safely given without the assistance of a second veterinarian. With the proper kind of an inhaler, and at the present price of chloroform, the expense is very small; and while it is much more convenient to have the anæsthetic given by a professional assistant, it is not particularly necessary, as one can both administer the chloroform and operate by having the assistance of ordinary help. Again, some oppose the use of chloroform on account of the extra time occupied in its administration, and the recovery of the animal from its effects. If it were necessary for these parties to have the surgeon's knife inserted into their own sensitive bodies they would immediately discharge the attending surgeon should he decline to administer an anæsthetic on account of a little extra time consumed, and they would be justified in doing so. These are some of the reasons why veterinarians do not use anæsthetics more extensively.

I believe that our colleges (at least some of them) are not altogether blameless for this apparent indifference of many of their graduates in regard to using the knife upon our sensitive, yet helpless, patients. I do not think sufficient stress is put upon the subject to impress the student's mind with its importance.

If students were given a little opportunity of seeing the various operations performed under anæsthesia, and if they were taught the proper modes of administering the agents to the different animals in detail, they would be less timid when they assume the responsibility of an individual practice; and

would not only enjoy the benefits to be derived from the general use of anæsthetics in their operations, but would command greater respect and admiration from their patrons, the majority of whom are opposed to witness the extreme suffering of their animals when operated on in a conscious condition.

As to the comparative value of the different anæsthetics in veterinary practice there is a difference of opinion, but it is generally conceded that chloroform is the best agent for all the lower animals, the dog, perhaps, excepted. Whatever drug is used, it should be pure.

Dr. Archie Stockwell, in an excellent article published in Vol. XIV of the AMERICAN VETERINARY REVIEW, states that neither clinical experience nor experimental research has been able to positively demonstrate the exact conditions, in either man or animals, to which any one anæsthetic is specially applicable, or even under which it can be most advantageously employed, for the information extant is almost wholly made up of negations.

Each individual patient requires individual study, since what may be "meat" for one may prove "poison" for another, and the final selection, if judiciously made, will be based solely upon the physiology and pathology of the disease; the physiological manifestations prone to follow the use of the anæsthetic, and racial and individual idiosyncrasies.

The same author, in a second article on this subject, published in Vol. XV of the AMERICAN VETERINARY REVIEW, states that chloroform should be preferred to ether in aged creatures, who, as a rule, bear chloroform better, especially as ether may induce pulmonary troubles. In operations about the mouth or respiratory organs, where the actual cautery is to be used, ether is inhibited, because of its inflammability.

In cases of lung infection and where absolute muscular relaxation is demanded, as for the diagnosis of tumors, the reduction of luxations, etc., chloroform is vastly the superior of ether.

In certain abdominal operations, such as herniotomy; and in cases where venous engorgement is a decided advantage,

as in the ligating of large arteries, chloroform is to be preferred. Chloroform is also preferable when an anæsthetic is required to be frequently exhibited to the same individual, man or animal, the class *felidæ* excepted.

Where degenerative disease of the heart or kidneys exists, or both (as they are associated and interdependent more often than is commonly supposed), provided there is no serious pulmonary complications, ether, should by long odds, obtain the preference. When pulmonary disease exists, without renal or cardiac complication the morbid condition becomes, *per se*, an element of safety in the administration of chloroform, while it inhibits the employment of ether.

When death is caused by the administration of an anæsthetic in too great a quantity, it is generally due, especially in the lower animals, to respiratory arrest, but that death is sometimes caused by cardiac paralysis, especially in the dog, following the use of chloroform, there is no doubt.

Unger discovered that animals, especially canines, chloroformed for several hours at a time and upon successive days, showed upon autopsy undoubtable evidence of fatty degeneration of the (1) heart, (2) kidneys and muscular structure, and (3) gastric and mucous membranes generally.

Strassman, as a result of independent experiments, corroborates Unger, and sums up his researches as follows:

“1st.—After chloroforming in dogs, there can be demonstrated a fatty metamorphosis of the liver; the heart may partake of the same changes as a secondary result; other organs are seldom affected. The changes consist of true fatty degeneration, and not of fatty infiltration.

“2d.—Subsequently to the usual chloroform narcosis, and when recovery therefrom has apparently taken place, a fatal result is occasionally observed to occur.

“3d.—Inasmuch as in the fatal cases the heart changes were found to be particularly well marked, these latter may reasonably be assumed to have been the cause of death.

“4th.—In non-fatal cases, the evidence of degeneration changes are not found after several weeks.

“5th.—These changes are particularly prone to occur. In

those in whom debilitating influences, such as hunger, loss of blood, etc., can reasonably account for the susceptibility to the undue action of the anæsthetic. In young and vigorous animals, a greater power of resistance counteracts a tendency to these changes."

Giving credit to the above experiments it is apparent that chloroform anæsthesia produces a marked effect upon the dog, and I think we may safely conclude that ether, or a mixture of alcohol, chloroform and ether is a safer anæsthetic for that animal.

In my experience with anæsthetics in dogs, I have nearly always used the alcohol, chloroform and ether mixture: one part of alcohol, two of chloroform, and three of ether, with the happiest results.

I do not know the exact number of dogs I have anæsthetized with this agent, and while my canine practice is very limited, compared with that of some veterinarians, yet I have spayed about fifty bitches, castrated a few males, and performed other operations under anæsthesia, so that I think I have given it to dogs about seventy-five times without a fatal result.

In anæsthetizing the dog I use a funnel-shaped bag, made of gum cloth, the same as is used in making storm cloths for carriages.

Upon a few occasions temporary respiratory arrest has occurred, but in these cases normal respiration resumed after the removal of the bag from the nose, a little shaking, and a backward and forward movement of the fore-limbs. More difficulty was experienced in one case. It was a setter dog that was being anæsthetized for the purpose of amputating his tail. The dog struggled violently as soon as I put the muzzle to his nose, and, instead of removing it and giving him a little air, as I should have done, until he quieted down and became accustomed to it, I held it to his nose until he quit struggling, when I noticed that he had also quit breathing. I shook him, pumped his legs, and pulled out his tongue, yet he appeared lifeless. I then stepped to the pump, a few yards away, pumped some water, and dashed it on his

head, and yet he did not resume breathing. I about concluded that it would be unnecessary to amputate his tail, for a dead setter whose caudal extremity is intact is about as valuable for hunting-purposes as one that has been relieved of that portion of his anatomy. But I opened my case, and from the aqua ammonia bottle I poured a few drops into my patient's mouth, when, to my delight, he began to breathe and I proceeded to cut off his tail. This, no doubt, was very close to a fatal result; but at that time I had not had much experience in the use of anæsthetics, and I consider the trouble was due to a fault of mine, and not to the anæsthetic. I am satisfied that one should not be in too great a hurry in anæsthetizing dogs, in order to grant them the greatest degree of safety. In all other animals I have used chloroform, so that I am not well prepared to discuss the comparative value of the different anæsthetic agents.

In my experience with cats, which is rather limited, I have found that chloroform acts nicely. I have chloroformed them for castration, stitching wounds, removing foreign bodies and decayed teeth from the mouth, etc., and simply use a little cotton-batting saturated with the agent, being careful not to hold it too close to the nose. In hogs I have administered chloroform for such operations as gastro-hysterotomy; castration of cryptorchids; operations for diseased scrotum, resulting from improper castration; scrotal hernia; removal of tumors, etc. In giving the chloroform, I use cotton-batting without any muzzle or sac, and I find that hogs take it very nicely if they are given a little air during the administration.

During the last summer two hogs that I was operating on under anæsthesia died, and I regret that I did not make post mortem examinations to ascertain, if possible, the cause of death. The first was a boar that weighed about eighty pounds, and had a large scrotal hernia. An assistant caught him where he was running with others, and pulled him by the leg several rods to a shed where the operation was performed. I gave the chloroform, and, after a struggle or two, the hog became quiet, and I took the anæsthetic from his nose and

operated on him, doing the covered operation, using a ligature instead of a clamp. He still breathed, and I had no thoughts of him dying, but when I had nearly finished washing, etc., I saw he was dying, and I could not prevent it, notwithstanding my efforts. The second case was a rather small pig with a diseased scrotum, following castration, complicated by a bad hernia, the whole mass being as large as my head; consequently the operation was prolonged and my assistant renewed the chloroform several times. When we had finished the operation the respirations were shallow, and the pig lived only a few minutes.

In Case I, the hog inhaled but little chloroform, in fact, much less than it usually requires to produce anæsthesia suitable for such an operation, and as he breathed for ten or fifteen minutes after the chloroform had been removed from his nose, I can scarcely account for his death. He may have been injured in his struggles while being brought to the place of operation, or his death may have been due to a too sudden inhalation of chloroform.

In Case II, the pig was not very strong, and the operation occupied some time, thus requiring a great deal of chloroform; and as its administration had to be left largely to the men who were assisting in the work, it is quite probable that the pig received too much of it, which caused its death. If due care be taken hogs can be chloroformed with but little risk. Young pigs take but very little of the drug before they become unconscious.

I have heard it stated that horses are less susceptible to the effects of chloroform than all other domestic animals, but my experience does not corroborate this, as I have found that cattle offer a greater resistance and are anæsthetized with greater difficulty. In painful operations on horses and cattle I nearly always use an anæsthetic if the nature and seat of operation will permit. If the desired effects can be attained by producing local anæsthesia I use cocaine, which in my opinion is a very valuable addition to our materia medica. It is surprising the number of operations that the use of this agent renders painless, which otherwise would be very

painful unless a general anæsthetic were used, and very often it saves the trouble of casting the animal. Operations upon the feet and eyes, trephining the sinuses of the head, removal of tumors, if not too large, neurectomy, many cases of firing, etc., can be done under the effects of cocaine. If a local anæsthetic is impracticable I use chloroform, and I find that animals that have undergone serious operations when under the influence of an anæsthetic, are free from the great shock and constitutional disturbance which is so often seen when such operations are performed on animals in a conscious condition.

In administering chloroform to horses and cattle it is necessary, in compliance with economy as regards both time and expense, to administer it in a tolerably concentrated form, and yet, if there is not some provision made in the inhaler used to allow the escape of impure expired air the animal is apt to suffer from lung affection, or some other complication afterward, especially if the nature of the operation has been such as to demand the application of the inhaler for a considerable length of time.

Two or three years since, in talking with a prominent veterinarian in regard to this subject, he stated that he had almost discarded the use of general anæsthetics on account of pneumonia following anæsthesia. The same veterinarian mentioned another prominent practitioner whose experience had been similar.

Upon making inquiry as to the kind of an inhaler they used, I was told that it was nearly similar to the one I have had made and use, and which you now have an opportunity of examining, except that it was not supplied with the holes and button on the end.

As I have used this inhaler several years on perhaps a couple of hundred animals and have never had a case of pneumonia or other complication follow, I conclude that these holes in the end of the inhaler, and the button so arranged that the holes can be opened during the expiratory act, thereby permitting the escape of the impure air, is a big improvement.

In administering the anæsthetic, if the animal struggle

violently when it first smells the drug, as it is quite apt to do, I turn the button, so as to admit a little fresh air, when usually a quieting effect is produced, then I turn the button so as to close the holes. The air now being excluded as far as possible, the animal soon yields to the effect of the drug, when I open and close the holes alternately during expiration and inspiration so as to get rid of the impure air and prevent its being inhaled repeatedly. After the desired condition of anæsthesia is reached, I turn the button so that the holes are open, and if I think the operation is going to occupy much time I pour in a little more of the drug. In this way the patient is getting some pure air and at the same time is inhaling the anæsthetic. With this apparatus it is not difficult to both operate and give the anæsthetic with the assistance of ordinary help.

The time occupied in producing the condition of anæsthesia, and the amount of the drug used, vary with the age and peculiarities of the animal. Yearling and two-year-old colts usually require one or two ounces for short operations, such as castration, and the time taken to anæsthetize them is from one to five minutes. Older animals usually require more of the drug, and cattle take more than horses.

Two or three times I have tried to kill horses with chloroform, and after using several ounces and taking considerable time, I have had to resort to other methods. I do not wish to be understood, however, that I claim that horses cannot be killed by the inhalation of chloroform; neither do I recommend the careless use of it, for some individuals are much more susceptible than others, and we should always be on our guard.

This paper is already too long; our object in bringing this subject before you is to endeavor to stimulate a thorough discussion. To me it is a subject of great importance, and one I think that has been sadly neglected. It may be that I have become a fanatic on this line, but I will say that when it is necessary to perform painful operations, when the administration of an anæsthetic is impracticable, as it sometimes is, it is a very unpleasant part of my practice; and if what I have

written, and the discussion which I hope will follow, have the effect of producing a deeper feeling of sympathy for our patients, so that the different operations to be performed will as often as possible be done under anæsthesia, then I shall feel amply paid for my trouble.

In conclusion, if any of you desire one of these inhalers I will have it made and sent to you at cost.

PECULIAR FATAL RESULT OF AN ŒSOPHAGEAL OBSTRUCTION.

BY E. C. THURSTON.

A Paper read before the Montreal Veterinary Medical Association.

The subject was an Irish terrier pup, about eight months old, brought to the hospital on the 31st of October last, at 9 A.M., suffering intense pain; the history of the case was brief, the animal being first noticed to be ill shortly after dinner the day previous.

The symptoms pointed to some gastric or intestinal trouble, the patient looking repeatedly around to one side, and tucking his nose close up against the abdomen, this would be followed by occasional efforts to vomit, a complete stretching out of the body, all four limbs being extended and the animal lying with the abdomen to the floor; pulse very rapid, temperature 104° F.

After a hot bath, a dose of castor oil was administered, and an enema of hot water and soap given, a large linseed poultice was then applied to the abdomen, this being renewed every hour; shortly after the first poultice was applied, there being no abatement in the suffering, an anodyne was administered, being repeated at intervals.

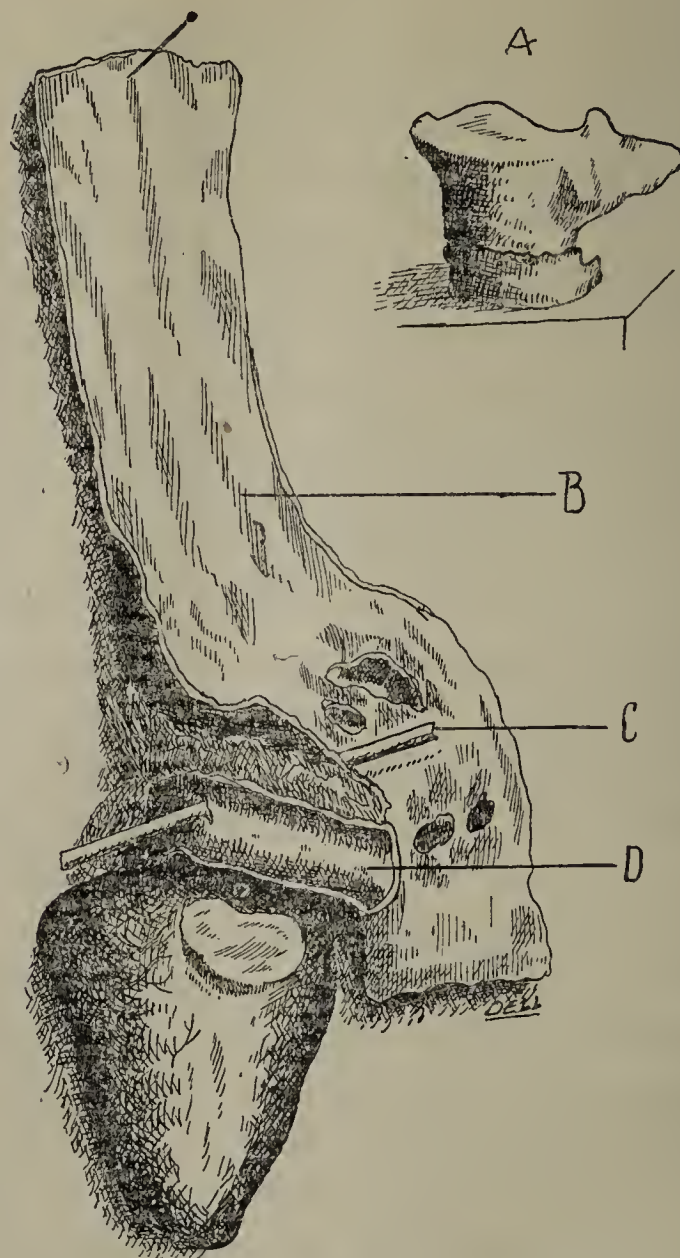
At three o'clock in the afternoon he passed both urine and fæces, the latter thin, of a yellowish color, containing traces of mucous; the last opiate was given at eight o'clock in the evening, the poultice was changed several times up to midnight, when the patient was given three ounces of beef tea and left for the night, being perfectly conscious and apparently free from pain; both food and water were offered him, but he showed no inclination toward either. When seen at

seven o'clock the following morning he was sleeping quietly, but about two hours later he commenced to moan and show further signs of pain, though to all appearance it was not so severe as that of the day previous. The same treatment was continued throughout the day, namely poultices and anodynes with an occasional enema of warm water. At six in the evening he was seized with a shivering fit as if suffering from cold, although the atmospheric temperature of the quarters in which he was confined was fairly high, the patient's temperature had fallen to 98° F. However, he was wrapped in warm woolen cloths and placed in a basket near the steam radiator in the pharmacy and an alcoholic stimulant given; an effort was made to repeat this in an hour, but power of deglutition seemed to be lost. At eight o'clock he was seen to be rapidly sinking, mucous membrane of the mouth was extremely pale, and the power of locomotion almost entirely gone; at 9.15 there was a profuse rectal hæmorrhage and death followed within an hour.

Post Mortem.—Being unable to communicate with the owner, the autopsy was not held until sixty hours after death. An opening was made along the median line and abdominal organs exposed. The spleen was in its normal situation, somewhat elongated, thin and soft, of a pale red color, on section soft and pale; pulp normal in amount, fibrous tissue normal in quantity, malphigian bodies distinctly seen, large vessels containing well formed clots non-adherent; liver pale and friable. The intestines contained a blackish green semi-fluid mass. Intestinal mucosa pale; stomach half filled with a blood cast.

Thoracic organs.—Slight adhesion of the right pleura, lungs pale and crepitant throughout, heart normal in size, right auricle almost empty, right ventricle contained some fluid blood and a dark clot, valves normal; left heart almost empty, valves normal, muscle pale; lungs pale and anæmic.

Œsophagus at the level of 1 cm., above the base of the heart obstructed by bone, irregular and jagged in form, greatest diameter 3 cm. by 2 cm. by $1\frac{1}{2}$ cm., causing several ulcerations, one adjacent to the aorta, 2 c.m. long by 7 mm.



A.—Bone causing perforations, etc. B.—Internal aspect of œsophagus. C.—Skewer placed in perforation into lumen of aorta. D.—Internal aspect of aorta.

wide, surface smooth, red, and at one point penetrating the lumen of the aorta; another very small one is beneath it; on the other side are two ulcerations, one quite penetrating the œsophageal tissues, another small one more superficial. From this it will be seen that death was due to internal hæmorrhage caused by this piece of bone penetrating the œsophageal wall, and into the lumen of the aorta.

In conclusion, I beg to thank Dr. Martin, of the Pathological Laboratory, for the very kindly interest he has taken in this case; and also my fellow student, Mr. Harri H. Dell, for the admirable pen drawing from which the accompanying cut is taken.

EXPERIMENTS WITH BARIUM CHLORIDE.

By J. J. MCCARREY, McGill University, Montreal.

A Paper read before the Montreal Veterinary Medical Association.

The following case reports embody the results of some experiments recently made by the '96 Journal Club with barium chloride as a therapeutic agent in the treatment of colic. This drug was brought to the notice of the profession by Dieckerhoff, who highly recommends the agent on account of its prompt and efficient action in producing peristalsis, and its low cost as compared with pilocarpine and eserine.

CASE I.—Bay gelding, aged, weight about twelve hundred pounds, subject for experiment. The animal in question received an intravenous injection of one gramme of barium chloride in solution. In four minutes the peristaltic murmur was much increased, followed by the evacuation of fæces. In nine minutes another evacuation occurred and again in twenty minutes. The pulse and temperature were unchanged throughout.

CASE II.—Bay mare, weight about one thousand pounds, suffering from spasmodic colic. Was given an intravenous injection of one gramme of barium chloride in eight cc. of water. In three minutes after there was considerable straining, and increased uneasiness. In five minutes the animal defecated, the fæces being hard in consistence. In thirty minutes after injection fæces were again expelled and at intervals of a few minutes for an hour, each evacuation being softer than the preceding. Straining was marked between evacuations, indicating violent peristalsis. In this case there was a slight increase in pulsations, respiration and temperature. In three hours the animal showed no symptoms of colic, and the effect of the drug had apparently passed off.

CASE III.—Bay mare, aged. Received a subcutaneous injection of 1.2 grammes of barium chloride in 10 cc. of water. One minute after injection the animal appeared uneasy. In fifteen minutes after she commenced to strain, but no evacuation occurred till half an hour after receiving the injection.

After this at intervals of a few minutes evacuation occurred, continuing for about an hour and a half. No change in temperature nor respirations, but the pulse was slightly accelerated.

CASE IV.—Brown gelding, aged, suffering from spasmodic colic. Received 1 gramme of barium chloride dissolved in about 10 cc. of water intravenously. Fæces and flatus passed in nine minutes, although straining was noticed about one minute after injection. Evacuation took place at intervals of a few minutes, continuing for half an hour, although there was an abatement of colicky symptoms immediately after the first evacuation.

CASE V.—Bay gelding, five years old, showing similar symptoms to preceding case. Received 1 gramme barium chloride dissolved in 10 cc. water intravenously in the jugular vein. Fæces were not passed till twenty minutes had elapsed, but after that at intervals of five to fifteen minutes. This case did not recover from colic for three hours, although the violence of the symptoms were much lessened after the first evacuation.

CASE VI. The subject in this case was a thoroughbred mare, five years old, and in about the fifth month of pregnancy. The animal was taken with colic at 9 A.M. Anodynes were given with warm water injections. This treatment was continued throughout the day without any improvement. At 8 P.M., as a *dernier resort*, it was decided to use barium chloride, the use of which had been delayed on account of the state of pregnancy in which the animal was. At 8.15 P.M. an intravenous injection of 15 grains in 5 cc. water was given intravenously. At 8.19 the first symptoms of the action of the drug were noticed. The animal laid down and strained violently. Five minutes after flatus and a small quantity of almost liquid fæces were passed. Straining continued at intervals for half an hour without the passage of fæces and the colicky symptoms apparently aggravated. At 9 P.M. rectal injections of warm water were given and an exploration revealed the fact that the colon was filled with fæces which were passed a few minutes later. The animal made a complete recovery.

LIGATION OF THE CAROTID ARTERY.

By E. H. MORRIS.

A Paper read before the Montreal Veterinary Medical Association.

The subject was a two-year-old colt, well-bred, in good condition and of a highly nervous temperament. He had been tied near an iron picket fence, and in his restiveness tried to jump over it; the hitch rein being still tied, caused him to fall on the fence, severely lacerating the deeper tissues of the neck at the lower third of the cervical vertebra, causing much hæmorrhage. I was called to see the colt, but not until after every farmer who happened to be present had exhausted all his "*sure*" methods of arresting hæmorrhage. Some had stuffed dried leaves and dirty rags in the wound, others had packed coal ashes in it and some had eventied strings around the animal's tail to stop hæmorrhage of the carotid.

When I arrived I found the animal so weak that he could hardly stand, and he was easily thrown down by pulling his head to one side and twisting it a little. After having carefully picked out all the dirt and trash, I washed the wound carefully and was able to locate the exact source from which the blood was coming. The wound, which was on the right side, was about six inches long, running in a longitudinal direction through the scalenus muscle, exposing at least four inches of the trachea, carotid artery and vagus nerve. On observing more closely a torn place in the carotid, about one fourth of an inch in length, could easily be seen, from which the blood was oozing.

I had never heard of the carotid being ligated, and at first was puzzled to know what was to be done. The first thought that struck me was, how was this side of the head and face to receive nourishment? The animal was bleeding to death, and what was to be done was to be done immediately, as the pulse was already imperceptible at the submaxillary artery. I applied a strong silk ligature below the wound in the vessel, and through fear of this giving way applied another at the same place. I also put one beyond the wound, the peripheral

ligature was necessary on account of the anastomosis through the vertebral into the occipital and innominate arteries.

We next washed the wound out with a carbolic solution and put eight or ten sutures in the muscle and as many in the skin, leaving an opening at the bottom of the wound for pus to escape if any should form. He was then allowed to rise, which he did with much exertion. He was so weak that he could not walk without staggering from one side to another, and would occasionally plunge forward into the crowd which had gathered, seemingly in a fainting or unconscious manner. It was impossible to keep him quiet. Next he was given an ounce of whiskey subcutaneously, which seemed to bring him more to his senses, and he was removed to the stable, where an iodoform dressing was applied. At intervals of about three or four hours he was brought out of his box and cold water was allowed to run over the wound for an hour or two at a time. This was to keep down the inflammation and prevent arteritis being set up. He was taken to the stable about six o'clock in the afternoon. About nine P. M. I tried to give him a stimulating drench, when he gave a lunge and fell with his head under the manger. We concluded that worrying him by drenching would do more harm than the drench would do good, as he was very wild. We did nothing more with him till morning. Next morning the pulse was imperceptible on the injured side, but on the other side was very weak and rapid; temperature was 98° F., and the right side of the face and the right ear were much cooler than the left, the right carotid being the ligated one. The wound looked well and the sutures were still in good condition, much to my surprise, for I fully expected them to have been torn out. There was no great swelling, and no exudate, but it was very hot and painful, so I continued the cold water treatment.

The animal ate some grass and drank heartily, but was still very weak, and I continued through the day to administer mild stimulants. For the next three days we kept up the cold water treatment and tried to keep the wound aseptic. He was much stronger, the appetite returning. The owner, who lived fourteen miles in the country, came in on the fourth day

after the injury and took the animal home, against my advice, for I thought the colt was too weak to make such a long trip. However, he did stand it very well, and the owner told me that the wound healed entirely without any appreciable slough, and the sutures kept in place to the last.

The reason the sutures held so well in this case is that the wound was so painful that he could not rub against anything without causing much discomfort. I have not seen the animal since he was taken home, but the owner told me that there was not the slightest scar left, and that one side of his face was as warm as the other, and the colt seemed as well as he ever was.

INTERESTING POST MORTEMS.

By C. E. CLAYTON, D.V.S.,

Assistant Surgeon American Veterinary Hospital, New York.

PERICARDITIS IN A CAT.

On November 30th a cat was admitted to the hospital with the following history: For the previous ten days had appeared dull and for the last three days had eaten nothing. Respiration was seen to be difficult and very much increased, salivation free and the appearance of ascites. A diagnosis of heart disease was made, the nature of which it was unable to discern, on account of the difficulty of keeping her quiet. She died the next day, and on post mortem about ten ounces of fluid were found in the abdominal cavity, about five ounces in the thoracic cavity, and about three or four in the pericardial sack, and here was where the lesions existed; the pericardium was enormously thickened, the heart hypertrophied, and on the left side the heart had become adherent to the pericardium for the greater part of its surface. When they were broken apart the surfaces looked exactly like the rough granulations of a wound.

HEART DISEASE IN A DOG.

On December 25th a cocker spaniel was brought to the hospital suffering with incessant cough, which she had had for two years, treatment having proved useless. The owner

wished her destroyed, which was done by etherizing. On post mortem all organs seemed normal, other than being surrounded with immense quantities of fat, except the heart, which was somewhat hypertrophied; upon examining its interior a most beautiful specimen of calcified valves, the bicuspid showing the most changes, was discovered.

HERNIA OF THE INTESTINES THROUGH THE MESENTERY IN A HORSE.

On December 9th I was called to see a black mare, and found her suffering severe abdominal pain, the history being that she had been all right previously, in fact had never suffered any illness with the present owner; had been ridden in the ring that evening, but on coming into the stable showed severe pain. The usual anodyne treatment was prescribed and administered, and in about twenty minutes seemed to give very great relief. She was then left, with orders to call us again if she did not get better. At 11:30 I was called again, and on arrival found her with constant pains, and wishing to lie down all the time; when made to rise she would walk in a circle and finally throw herself down. Every effort was made to relieve the pain, but to no purpose, and a serious prognosis was given. She died early the next morning, was brought to the hospital and a post mortem made. Upon opening the abdominal cavity a portion of the intestines showed strangulation, and upon looking for the cause of it we found a rupture of the mesentery adjacent to the foramen of Winslow, and through this rupture a portion of the intestines, measuring twenty-one feet, had passed; one border of the rupture formed a cord, which was wound around the portion forming the hernia, so to speak, like a ligature.

TAPE WORMS IN A CAT.

On January 12th a cat was admitted, and upon examination found to be suffering with gastro-intestinal irritation and profuse diarrhea, which the owner said she had had for three days; he had administered bismuth and opium, which we changed to cannabis indica, which seemed to relieve the pain very well, but she gradually became paralyzed in the

abdominal extremities, then extending forward, when the left fore leg seemed to be affected and death took place on the 14th. Post mortem showed organs normal, until the intestinal tract was opened, which contained no food whatever, but about a dozen tape worms were found.

ANTHRAX IN NEW JERSEY.

By S. C. TREMAINE, D.V.S.

That there was an outbreak of anthrax in New Jersey seems to be doubted by Dr. J. W. Hawk, President of the New Jersey Veterinary Medical Association, and others; yet few who saw a well marked case of the disease which proved so fatal among the horses, mules and cattle of Cumberland County during the summer of 1895, would doubt the diagnosis.

Possibly the reason that no report has been made by a veterinarian is because the State officials, in making a selection for inspectors, seem to prefer butchers, bakers, etc., rather than veterinarians, who are employed to do the inoculating under the instructions of said inspector.

The disease first made its appearance in 1895 near the village of Newport, about the 1st of July. Dr. Glandon, president of township health board, wrote the State board asking that the State veterinarian be sent to investigate. There being no State veterinarian, Dr. Thomas B. Rogers, of Woodbury, N. J., was sent by the State Board of Health; he did not examine a case of the malady, but from the history diagnosed it anthrax.

Dr. W. Runge, of Newark, also made a visit to Cumberland County, but saw only one cow that was dull, and had a temperature of 105° , which animal died two days later; blood from this cow was sent to Dr. Runge, but he found no bacillus. The blood from three or four other animals was sent to him, in all of which he found the bacillus anthracis.

The disease was prevalent in two forms, viz., external and internal anthrax; the former, or milder form (symptomatic anthrax) being characterized by large oedematous swellings situated under the chest, abdomen or in the groin, sometimes

extending to the foot. These swellings are very tense, and if punctured will emit a dark, bloody serum, gradually becoming straw-colored as it ceases to flow. Temperature in external anthrax averages about $104\frac{1}{2}^{\circ}$, pulse from 60 to 90, respiration about normal; mucous membranes highly injected, and in some cases ecchymotic spots will be seen on the Schneiderian mucous membrane; appetite as a rule good. Bowels generally constipated, animal generally succumbs in three to four days.

Immediately after death the animal swells to an enormous size, the skin crepitates on pressure, this being due to the formation of gas in the subcutaneous areola tissue. On post-mortem the blood will be found almost black, very fluid, and does not clot. Extravasations into the sublumbar tissues are often found, the liver and spleen are found enlarged, and broken-down effusions are found in the thoracic and abdominal cavities. The intestinal mucous membranes are in many cases highly congested and the intestines covered with petechial spots.

In the internal form of anthrax (splenic apoplexy), there are no premonitory symptoms, with the exception of a rise in temperature; animals apparently well an hour or two before, will die, and on post-mortem present all the symptoms of anthrax. After death a bloody, purulent discharge escapes from the rectum (which is prolapsed), and in many cases from the nostrils.

Cattle and mules seem more susceptible to the internal and more fatal form, and die suddenly. I was called on July 5th, 1895, to treat a horse for Quincy Joselyn, at Newport; supposed the case to be purpura hæmorrhagica, treated it for such, and animal made a speedy recovery.

Was called to the same place on July 9th to see a bay horse, owned by Reuben Leaming, suffering from symptomatic anthrax; œdematous swellings under the abdomen and the chest, legs also swollen; treated this case the same as Joslyn's; animal recovered in about fifteen days. Mr. Leaming had previously lost a cow and a mule with symptoms of anthrax—he being the first to lose an animal with the disease in

1895. I also visited five other cases on July 9th, all of which died within a few hours. Hearing a few days later of several animals dying in the vicinity of Newport, I went to investigate on my own account.

Producing blood from a horse suffering with external anthrax, I inoculated a rabbit, which died in about thirty-six hours, and on post mortem presented all the lesions of anthrax. Examined this blood with microscope and found bacillus anthracis, thus expelling any doubt as to diagnosis.

On the 15th of July I held a post mortem on a horse, owned by Ambrose Gandy, the animal being sick only twelve or fourteen hours. This examination was made in the presence of Dr. N. M. Drake, of Philadelphia, and Dr. Glandon, M.D., of Newport, N. J., who examined some of the blood taken from the heart, and found the bacillus anthracis in abundance.

I saw three cases of external anthrax in cattle, one a steer that recovered entirely, being one of three remaining out of a herd of ten, the rest having all died within three weeks; also a bull that was terribly swollen in the hind extremities, the scrotum also swollen and covered with coffee-colored spots; the animal lived a week in this condition.

On the 16th of July I received from Pasteur Anthrax Vaccine Company forty doses of fresh anthrax lymph in twenty-dose vials, receiving later in the day one hundred doses more. I began my inoculations on the afternoon of July 16th, and by July 27th had inoculated one hundred and seventy-six horses, one hundred and fifty-two cattle, and fourteen mules. Of this number only three contracted and died of anthrax, and these were taken before second inoculation was made. In some instances where people had part of their stock inoculated, one or more of the animals that had not been inoculated had died; this generally happening on farms previously infected. Only in one instance do I know of an animal dying from the disease after the second inoculation.

The only bad effects I received from the lymph was from the first two twenty-dose vials, leading me to suppose that they had been kept on hand for some time. Several of the

animals I inoculated with this lymph swelled near the seat of inoculation in three or four cases to an alarming extent.

About July 28th the State Board of Health had appointed Joseph H. Powell "Special Inspector," and gave him authority to employ two veterinarians to inoculate in the infected district. Commencing my services for the State on the morning of July 29th and concluding them on September 6th, I inoculated 598 cattle, 252 horses, and 35 mules, making a total for State of 885 animals, and in all a total of 1,227. Nearly all of these were inoculated with the second lymph twelve days after the first inoculation. A few of the more ignorant and superstitious would not allow the second inoculation. It was not compulsory, the State generously offered it to them free and they were not urged to accept.

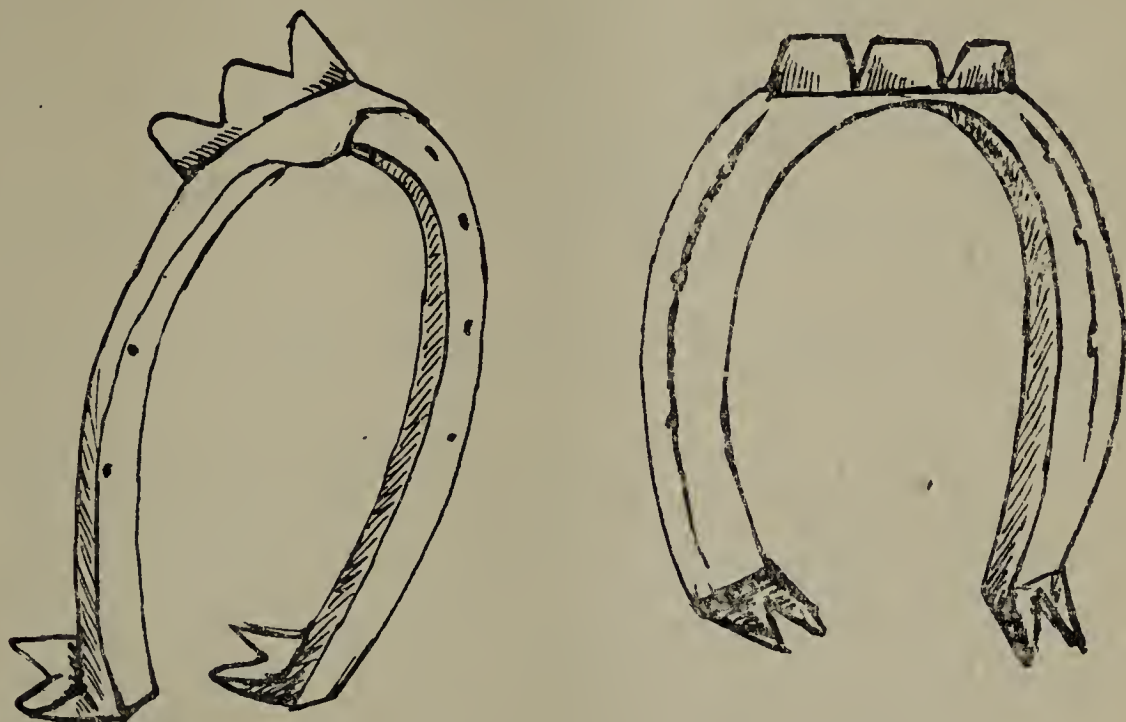
Whether the disease is anthrax or not makes little difference to the owners; what they want is a remedy to save their stock, their only means of livelihood in many cases, and Pasteur's anthrax lymph, from a crucial test, seems to answer the purpose. I have no means of knowing how many head of horses, mules, and cattle have died in the last outbreak, but believe about two hundred head of animals (a low estimate) have succumbed. As to the origin of this disease, nothing is positively known, the theory, or the one most accepted is, that it was imported with hides from Russia into Delaware, the refuse from the tanneries being used as a fertilizer. Cattle were thrown into the Delaware bay and carried by the tides to the New Jersey shores, where the disease first made its appearance, near the marshes and low lands covered by tide water.

NEW FROST SHOES.

By WILLIAM DOUGHERTY, D.V.S., Baltimore, Md.

In presenting the frost shoes for consideration to the profession, the object is to note the advantages they possess over the old style, particularly in northern climates, where winters are severe, and which consequently would necessitate quite

often the removal of the shoes to sharpen points, whereas, in the frost shoes, the points can be sharpened by the use of an ordinary three-cornered file while on the animal.



The division of the toe into three, and the heel into two sections, or pieces, gives the animal a greater purchase on ice, preventing slipping.

REPORT OF THE COMMITTEE ON DISEASES.

By M. R. TRUMBOWER, Chairman.

Read before the United States Veterinary Medical Association.

(Continued from page 697).

PENNSYLVANIA.

Dr. James A. Waugh, of Allegheny City, writes:

"Influenza prevailed among the horses as usual, with many fatalities among green and shipped horses. I have seen some tuberculosis in cattle, and one case in a horse tested with tuberculin, but have not seen any cases of glanders or splenic fever. Hog and poultry cholera prevail in some localities. Cerebro-spinal meningitis prevails at times in some localities. Actinomyccosis is rarely seen in this section. The weather has been exceedingly variable, from one extreme to another this summer, and many animals have suffered from

nervous and mental derangements and well marked abnormal actions, which I attribute to some as yet undefined and unusual causes; probably of toxic origin due to chemical alterations in food and water supplies—as I have seen it caused by feeding bologna sausages to dogs, and have seen other forms due to feeding on refuse from saloons.”

Dr. Otto Noack, of Reading, reports an extensive prevalence of laryngo-pharyngitis acuta in his part of the State.

VIRGINIA.

Dr. J. P. Turner, of Fort Myer, makes the following statement:

“I beg leave to reply that as cavalry horses are famous for their good health, I can report very little that is interesting. I have not been stationed East long enough to make any extensive observations, save that the contagious febrile diseases all run a more decided course in the East than in the Northwest, and the fatalities are greater, especially from purpura. In Northwest Nebraska and Wyoming, glanders usually assumes the chronic form; especially is this true among the Brule Sioux ponies, where my observations have been quite extensive. The attacks of influenza and distemper are mild in Northwest Nebraska, and purpurar are. In this section, Nebraska and Wyoming, periodic ophthalmia is seldom seen. In a large surgical practice, in Nebraska, South Dakota and Wyoming, covering a period of nearly four years, I never saw a case of tetanus, hence, I have heretofore reported that I did not believe the tetanus bacillus existed in the sandy, dry sections of the Northwest. Ranchmen in Wyoming report actinomycosis on the decrease. This may be true, but possibly, owing to the fact that all the large companies order their men to shoot them whenever found on the range, as it did not pay to ship them, even for rendering purposes.”

Dr. E. P. Niles, of Blacksburg, reports as follows:

“The most interesting disease reported was epizootic pharyngitis, which prevailed in the cities of Richmond, Norfolk and Charlottesville. The fatalities were light and treatment very satisfactory in most cases. The most frequent

complication is a form of iritis, which is easily distinguished from the ocular complications of influenza in that the conjunctiva does not become involved. Abscesses occasionally form in the sub-parotid and sub-maxillary glands. Pneumonic complications simulate contagious pleuro-pneumonia. Parties reporting the above did not state treatment adopted. Disease occurred mostly in the early spring; tuberculosis is prevalent in most dairy herds in this State. Over fifty per cent. of one dairy herd, tested with tuberculin by the Bureau of Animal Industry, re-acted. The owners name is not divulged by the Bureau in its report. [The Bureau seems to have gone into the Secret Service.]

“Texas cattle fever exists along the border line to a considerable extent each year. Glanders exists to a slight degree in Virginia. Anthrax among cattle is almost unknown. In connection with tuberculosis and the tuberculin test, I wish to call attention to the unreliability of the second test without the intervention of several months. On several animals that came under my observation, the reaction was very slight [one or two degrees] in the first test. On second test, just one month later, no reaction was obtained, yet a post mortem revealed tuberculosis. It seems to me that the first test is the one upon which we should make a diagnosis.”

WASHINGTON.

Dr. S. B. Nelson, of Spokane, sent the following :

“It may be of interest to you to know my observations in regard to certain diseases appearing in the Western country, having been in practice for five years in Spokane. The first two years I observed no anthrax, black-leg, or tuberculosis, but found an occasional case of glanders. In 1893 I observed glanders and three or four cases of tuberculosis, and one case of hog cholera in the immediate vicinity of Spokane. In 1894 the number of cases of glanders and tuberculosis was doubled, and thus far in 1895 I have had the opportunity of condemning inside the city limits seven cases of glanders which had been brought into the city from the surrounding country. I investigated an outbreak of anthrax in milch cows, in a small community in the lower end of the country, and from which

seven or eight cows died; only one sick cow recovered. One outbreak of black-leg in calves, where four or five died, and an outbreak of contagious pneumonia in a herd of 46 pigs, and from which 26 died in three weeks. This year I have also found about fourteen or fifteen cases of tuberculosis amongst the dairy cows in the dairies which supply milk to the city."

WEST VIRGINIA.

Report of Dr. Wm. Petrie, of Wheeling:

"We have no State veterinarian, and the only reports of diseases in animals is by farmers to the State Board of Agriculture. The diseases most frequently mentioned are distemper in horses, and parturient apoplexy in cows. These two maladies cause great losses every year to the stock owner.

"So far there has been no report of glanders, but there is no doubt that it exists in some sections. Tuberculosis is common in many dairies, but I cannot give any idea of the per cent. of cattle that are affected."

WYOMING.

Dr. A. A. Holcombe, of Cheyenne, reports the discovery during the last year of four cases of glanders; two outbreaks of black-leg; no tuberculosis.

WISCONSIN.

Dr. J. L. Scott, of Beaver Dam, writes:

"Since I have entered upon the duties of this office, Feb. 7th, 1895, I have condemned 25 horses with glanders. These have been found chiefly in the northwestern part of the State. There has been probably about 50 cases of actinomycosis reported to me in various parts of the State. Outbreaks of anthrax have occurred in the region around Green Bay, and on a farm near Horicon. At Green Bay it occurred on several farms. In all there has been in the neighborhood of 200 head of cattle lost from this disease. Hog cholera was quite prevalent in the northwestern part of the State in the spring, but no cases have been reported lately. There is no means of determining the percentage of tuberculosis in cattle, but from what I have seen I believe it will fall below five per cent."

NEW MEXICO.

Mr. J. A. La Rue, the secretary of the Cattle Sanitary Board, wrote the following letter :

“Excepting in a dairy herd of Jersey cattle, out of which ten head were found to be affected with tuberculosis, and were condemned and slaughtered by the Sanitary Board, there were no contagious or infectious diseases reported in New Mexico since a head of Texas cattle left fever on their trail ten years ago.”

ARKANSAS.

Special report by Dr. R. R. Dinwiddie, of the Arkansas Agricultural Experiment Station, a member of this Committee :

“*Southern Cattle Fever.*—In accordance with the request of the Chairman of the Committee on Diseases, I endeavor in this paper to present some of the more important facts in connection with the pathogenesis of this important disease of cattle, and more especially my own experience and opinions as to the ‘tick theory’ of its etiology. What I can say on this subject is, for the most part, well known to the veterinary profession, or at least to the reading part of the profession as represented here. Since the important publications of Smith and Kilborne on ‘Texas Fever’ in 1880, there has been practically nothing added to our knowledge of the pathology of this disease; what has been done since then being for the most part confirmatory of the conclusions reached by these investigators.

“My own investigation of Texas fever began in the summer of 1889, when attempts were made by Dr. Paul Paquin, then of the Missouri Agricultural Experiment Station, to obtain immunity in susceptible cattle by inoculation. My part in these experiments consisted in observing and making autopsies on the inoculated cattle after they had been imported from Missouri to infected ranges in Arkansas. It was assumed at that time that the disease was one of bacterial origin, an opinion which was supported by the writings of Dr. F. S. Billings, then of Nebraska. Of these experiments in preventive inoculation against Texas fever, it is unnecessary to say

more than that they were not successful. It was during that year that I first heard suggested by some of the stockmen and butchers who had seen much of the disease, their belief in the connection between Texas fever and cattle ticks. That such a connection does exist was shown first, as we all know, by the experiments of Smith and Kilborne. Before that time, the generally accepted theory was that cattle from the fever regions, when brought on to the northern pastures infected these by means of their excretions—fæces and urine—and the lengthy interval that was always observed before the disease occurred was explained by assuming that the germs required to develop for some weeks in the soil before regaining their virulence. We now know that these theories are incorrect.

“It is perhaps unnecessary to enter into details of the experiments, just referred to, of the Bureau of Animal Industry. With these, most of you are no doubt familiar. If I briefly outline my own experiments in this connection it is because these cover, to a large extent, the same ground, and with the admission that, so far as the tick theory is concerned, they were suggested by the Government publication of which mention has been made.

“In 1889 attempts were made to convey Texas fever to susceptible cattle by feeding them with the grasses closely cut from the infected southern pastures; and in the following two years very thorough tests were made of the supposed infection-bearing property of the fæces of southern cattle. Both of these tests led to negative results.

“In 1891, and again in 1892, the tick theory of infection was tested in the following manner:

“Close boarded pens of twenty to thirty feet square were put up at the experimental station at Fayetteville, which is a non-infected region, and on the surface of these pens were scattered in the early summer a number of full grown ticks, generally from twenty to a hundred, which had been picked from cattle in the fever-infected districts of Arkansas, Mississippi and Louisiana; one or more susceptible cattle were then introduced into each of the pens, where they remained until the completion of the experiment. They were closely

examined and their temperatures taken daily. Leaving out of account certain failures which occurred in the first year of these experiments, and due, no doubt, to the lateness of the season, the general result was this: From four to seven weeks after their introduction the first ticks were observed on the cattle. These were all of small size and could be seen only by careful examination; about the same time there was observed a rise of temperature, with more or less signs of ill health and loss of appetite, which in most cases continued for several weeks before a slow recovery took place. In a few cases the disease was not of much severity, but generally the attack was severe, although not fatal. These tests were made with young cattle of from one to two years old. Post mortem examinations were made in a number of the cases which were killed during the height of the fever, and later, during convalescence, and the diagnosis of Texas fever confirmed both by the gross anatomical appearances and by a microscopical examination. The ticks attained their full growth on these cattle about two or three weeks from the time of their first appearance. These, of course, were not the original ticks thrown into the pens, but the next generation hatched from their ova deposited on the soil. This experiment illustrates the way in which pastures become infected by southern tick-bearing cattle.

“In other experiments the ova deposited by large cattle ticks sent to me by Dr. Dalrymple, late of the Louisiana Agricultural Experiment Station, were allowed to hatch out in glass dishes in the laboratory and the young were then sprinkled over the bodies of susceptible cattle. The result was the same, except that the first symptoms of the fever appeared in from ten to fourteen days. These ticks in this last test attained their full growth in about four weeks. When full grown the females were picked off and placed in the laboratory in glass dishes where they immediately commenced their egg deposition, and in a few weeks later another generation of young ticks was obtained. In the first week of October the ticks from this second generation were placed on two cattle in a fresh pen, and in two weeks both of these cattle

were attacked with Texas fever, and one died with all the symptoms of the disease in its most acute form.

“Another experiment was made to test the virulence of ticks which have developed on horses. Young ticks, the progeny of those which had previously conveyed Texas fever to cattle, were placed on two horses; in one case they failed to develop properly and none reached maturity, but from the other a sufficient number of large ticks were obtained to make the desired test. Neither of the horses experimented with showed any signs of ill health. The progeny of these ticks obtained from the horse in the usual way on susceptible cattle yielded negative results. I do not, however, regard this test as conclusive, as the ticks used had been kept over winter in the laboratory and may in this way have lost their virulence.

“The results of these experiments were the same as those obtained by Smith and Kilborne. Profs. Mayo and Francis have also experimented in a similar way and reached the same conclusions. It was further shown by the Bureau experiments that the cattle from the infected regions lost their power of infecting northern pastures when all the ticks had been carefully removed from their bodies. If we accept this last experiment as conclusive, it is obvious that we must regard the cattle tick as the exclusive agent by which the virus of Texas fever is conveyed to northern pastures.

“When cattle from southern Texas fever regions are shipped for long distances north and set up disease in northern stock, it would appear from all the evidence at hand that this is really the case—that the tick is the exclusive intermediate carrier of the virus. Our experience with Texas fever in the South, however, does not support the statement, one time advanced, of ‘no ticks, no Texas fever.’ Northern cattle imported into central and southern Arkansas frequently die from this disease. Sometimes I have found ticks on their bodies in enormous numbers; sometimes very few have been found, and in other cases, none at all, even with the most careful search. In Arkansas limited outbreaks of Texas fever are common every year among native cattle in many of the

counties in the northern half of the State. In some cases these outbreaks can be traced to importations of cattle from adjacent counties, while in other cases it is the imported cattle which die while the natives remain unaffected. In many parts of the State the movement of cattle for distances of less than twenty miles is attended with danger during the summer months. In explanation of these facts we have to assume that even within districts far within that known as the 'Texas Fever Belt' there are numerous isolated tracts of uninfected ranges in which the cattle do not possess immunity against the disease. In these localities cattle ticks sometimes appear as numerous as in the infected regions around. In July of this year about two hundred cattle died in St. Francis County of this State. On the prairies on which they died the ticks are not at all abundant, most of the cattle being quite free from them. The owners report that those which died were often free from ticks, and in my own inspection I was unable to find them. *I think it is likely that one or more species of small flies which are exceedingly troublesome to cattle in these districts may be concerned in the propagation of the disease.* Other species of animal life may also act as intermediate bearers of the virus, and there is no evidence to show that this is not also contained in the water and soil of infected ranges, and taken into the system by ingestion or inhalation, as it is believed to be the case with malarial fevers of man. The tick method of natural infection is the only one which has been experimentally demonstrated, and on account of the peculiar habits and life-history of this parasite is, as we have seen, the agent by which the virus is carried to long distances and transferred to the bodies of other susceptible cattle. Other intermediate bearers which may exist in the regions in which Texas fever is endemic are probably confined to these regions, or accompany the movements of cattle for only short distances.

"Since the discovery of the tick method of infection, I have always advised that imported cattle be kept free from these parasites during the summer months, but have no data to show that this has been instrumental in preventing the disease. Accurate experiments, so far as I am aware, have not yet been

made to show whether or not susceptible cattle imported south would be exempt from Texas fever if kept absolutely free from tick invasion. That the tick is not a necessary intermediate host of the Texas fever parasite is shown by the possibility of conveying the disease from affected to healthy cattle by inoculation. Southern cattle are infested by more than one species of tick, although that described as *Boophilus Bovis*, Curtice, is by far the most abundant. One test which I made of another species taken from southern cattle seemed to indicate that it was destitute of virulence.

“As to the nature of the Texas fever germ, we are all willing, I think, to accept the conclusions of Dr. Theobald Smith. His researches in an extremely difficult field of work have shown us that Texas fever in cattle corresponds to malarial fever in mankind, and especially, as has recently been suggested by Dr. Harbaugh, to that severe form of malaria which is known as hæmorrhagic malarial fever. It is possible that it may be in a measure successfully combatted by the same treatment employed in that disease, namely, by a very large dose of quinine. Hitherto in my attempts at treatment I have generally employed this remedy, but only in moderate doses and not with much success.”

INCIPIENT BOVINE TUBERCULOSIS.

MAY IT NOT BE JUDICIOUSLY AND ECONOMICALLY TREATED?

By A. S. HEATH, M.D., V.S., Brooklyn, N. Y.

The relation of milk and meat to human health is so important a matter in the economy of life that the public should demand the best sanitary regulations to secure immunity from infectious diseases of our flocks and herds and their products. We have many advantages in the management of our domestic animals in maintaining them in health, over the relative conditions and environments of mankind. We can breed healthy progeny by sedulously breeding from absolutely healthy progenitors. In the human race, the medical profession cannot secure sanitary marital relations to prevent the transmission of hereditary diseases—the veriest bane of the

e. Fortunately for the races of man and the lower animals, *teriology* has proven the origin of the infectious diseases result from pathogenic organisms. And, although the mortal Koch failed to cure human consumption by means of tuberculin, yet he furnished to the veterinary profession a diagnostic agent in the tuberculosis of domestic animals of incalculable value. While in the healthy and tuberculous human subject the hypodermic injection of tuberculin causes a sudden rise of temperature, too often injurious, in the bovine race it indicates the most incipient attack of tuberculosis without in the least disturbing the health.

Human physicians have long prescribed for tuberculous patients, out-door life, high altitudes, equitable temperatures, a liberal dietary, etc., of more or less benefit to the invalids. These conditions are also beneficial to the animal patients of the veterinarian, but as the small value of animals will not permit a similar procedure from lack of economy, the veterinarian must fall back upon the science of sanitary breeding as a preventive, of incalculable value to the general public.

Human tuberculous mothers endanger the lives of their infants by suckling them, and this holds equally with tuberculous animals; yet, the milk of tuberculous cows is permitted for human food. This should not be tolerated by the boards of health, as we have a positive diagnostic agent to detect the slightest attacks of bovine tuberculosis, and as we possess no positive data at what the milk of tuberculous cows becomes infectious to the human subject, it would be safer and better economy to feed the thoroughly boiled milk of slightly tuberculous cows to pigs; and during the brief time, to subject the cow, if worth the expense, to the treatment which Dr. Cyrus Edson has apparently proven so serviceable to human patients in the more severe stages of advanced tuberculosis.

As I am about to test the "*aseptolin*" treatment in bovine tuberculosis, I shall report the result.

REPORTS OF CASES.

SUPPURATIVE ANEURISM OF THE GREAT MESENTERIC.

By H. D. HANSON, D.V.S., New York City.

On the evening of November 30th, 1895, I was called by Mr. D——, to see a black gelding, six years old, weighing about 1,100 pounds, suffering with what was called colic.

Mr. D—— informed me that he had owned the horse some two months, but that he was apparently in healthy condition until about ten days before, when the animal had shown signs of colicky pains almost every evening between the hours 6 and 8. The horse would receive his feed about 6 P. M., and would eat a few mouthfuls, or at times would refuse to eat and then would start in to paw, look around at his flank, and would continue in this way for some two hours, after which he would become easier, till possibly the following night about the same time, when the same symptoms would be shown. This had continued for some ten days, the attack gradually becoming more marked.

I found the patient in a box-stall, pawing somewhat, looking at his sides and moving around, being slightly uneasy. He would lie down occasionally and remain so for some length of time, being quite easy in this position. The mucous membranes were injected, the vessels dilated; the pulse was somewhat hard and small, being otherwise normal; the respiration were not altered; the temperature ranging about 101° F. the bowels were inclined to be loose, the fæcal matter about normal in color. From the history of colicky pains occurring almost every day, and from the several similar cases that have come under my observation, I made a diagnosis of probable liver trouble, although the yellowish condition of the mucous membranes were absent. The nature of the trouble, of course could not be made out, on account of the lack of sufficient symptoms.

The prognosis was doubtful: I advised the owner that if organic trouble existed, it would be only a matter of time till the animal would succumb; otherwise the animal would recover. The ordinary treatment of anodynes internally were used in the evening, to allay the pains. The horse was kept on flaxseed tea for forty-eight hours, with the addition of small quantities of bran. Then a pint of raw linseed oil was administered which caused a free movement of the bowels. After this I prescribed *nux vomica* (fluid extract) for its bitter effect, in combination with the fluid extract of *colchicum*, to slightly stimulate the liver.

The second night (December 1st), the colicky pains appeared again, but they were not so severe. After that, I saw the animal December 2d, 4th, 5th, 8th and 10th, during which time the pains were entirely absent, and continued to be absent for some ten days, during which time he was exercised and apparently in good health, so much so, that the owner concluded not to sell him as he first intended doing.

On December 20th he was driven, warmed up somewhat, during which time he was hit with a whip, which caused him to make a sudden jump; after reaching the stable he began to breathe rapidly and show colicky pains. At 4:30 P. M., the owner telephoned me to that effect. I found him to have symptoms of congestion of the lungs, temperature rising to 103° F., associated with colicky pains. He ultimately continued to grow worse and symptoms of enteritis were present the next day, and from his condition I gave an unfavorable prognosis. Death took place December 22d, a short time before midnight.

On December 23d, the post mortem was held: the small bowels were inflamed, as was the peritoneum. The right lobe of the liver showed fatty change. After removing the intestines, a large growth of the size of a cabbage head, of hard consistency, situated in the lumbar region towards the base of the cæcum, which on being removed proved to contain a large abscess in its center communicating with the ileo-cæcal artery and involving the right fasciculus of the great mesentery. The whole mass looked of a cancerous nature.

Death was due to enteritis and peritonitis, both probably brought on primarily by the rupture of the suppurative aneurism. And the question may be, did the sudden jump during exercise cause a rupture of the aneurism, with a peritonitis and enteritis, and death?

TETANUS AND ANTITOXINE.

By Jos. M. Good, B.Sc. V.S., Chattanooga, Tenn.

I enclose reports of two cases of tetanus which I treated with Gibier's tetanus antitoxine:

CASE NO. 1.—Was called on November 6th to see a well-bred driving mare belonging to one of our prominent physicians. The mare was rather stiff in the posterior limbs; when excited a little the membrana nictitans projected over the eyes. The mare was in harness at the time. The owner had noticed the animal being sluggish two days before, while he detected some stiffness in her movement the previous day. Upon being questioned about nail prick of the feet, wounds, etc., the

owner said that she had had a nail puncture in one foot about two weeks before, which suppurated a good deal. He kept the foot washed with a bichloride solution and dressed antiseptically. The wound healed up, lameness ceased and he had almost forgotten about the matter.

I diagnosed the case as one of tetanus. The physician became very much alarmed and said that he had very little faith in the efficacy of drugs in treating the case. I suggested using the antitoxine, of which I had just heard. Having used diphtheria antitoxine with good results in his practice the owner readily assented. We ordered by telegraph five bottles of three grammes each of Gibier's tetanus antitoxine. I at once gave the mare an aloetic purgative, and began on a liberal course of diuretics. We also prepared a large, darkened, box stall. The following is a record of the case:

Nov. 6th.—Pulse 37, temperature 99° , respiration 24; slight stiffness, eyes slightly covered; purgative given.

Nov. 7th.—Pulse 38, temperature 100.5° , respiration 24; stiffness more marked, bowels purging.

Nov. 8th.—Pulse 40, temperature 100.5° , respiration 46; gluteal and buccinator muscles rather tense, purging stopped; still able to chew and swallow.

Nov. 9th.—Pulse 40, temperature 100° , respiration 30; general appearance about the same; injected half bottle of serum at 2 P. M., again at 7 P. M.

Nov. 10th.—Pulse 40, temperature 100° , respiration 30; appeared brighter, good appetite, stiffness no worse; had bottle of serum at 8 A. M. and 7 P. M.

Nov. 11th.—Pulse 38, temperature 100° , respiration 24; animal seemed no worse, injected half bottle serum at 8 A. M. and 7 P. M.

I had to leave the city on Nov. 15th for two weeks on business, but felt confident that the mare would recover. No more antitoxine was used, having used only three bottles. The animal slowly recovered and returned to work in about thirty days from the beginning of the attack.

CASE NO. 2.—Was called on morning of Dec. 19th to see a very large cryptorchid horse. The horse was stiff in hind quarters, and owner suspected tetanus. The animal had had a gravel work out of one foot about three weeks previously. Diagnosed case as tetanus and advised the use of antitoxine. I had two bottles, of three grammes each, left over from last case. Ordered five bottles of antitoxine by telegraph.

Upon attempting to give an aloes ball I found the jaw partially locked. The bowels never purged. Gave diuretic

the first three days in drinking water. Gave the two bottles of antitoxine during the first forty-eight hours. The antitoxine that was ordered was delayed, and was not received until the afternoon of the 23d. The animal became worse rapidly, and on the third day was unable to swallow water. I gave a full bottle of the antitoxine on the afternoon of the 23d, and one on the 24th. On the morning of the 24th the animal began to get worse rapidly. On the morning of the 25th I quit using the antitoxine. The horse got much worse and got down in the stall late in the afternoon. I ordered the animal killed, but he died within a few hours afterwards.

CASE NO. 3.—On Dec. 17th, I saw a mule with a well-developed case of tetanus. He had had it about ten days. Was still able to chew and swallow food, but was very stiff. As the animal was of but little value I could not induce the owner to let me use antitoxine. A "quack" had charge of the case, but had assured the owner that the animal would die. The quack's treatment of the case consisted in giving five drops of some valuable (?) medicine three times a day on the tongue. Judging from the mildness and slow development of the case, I felt assured that the animal would recover even without the intervention of a scientific horse-doctor. Upon my informing the owner that we often cured cases even without antitoxine, he decided to let me prescribe for the mule. I gave him several powders of potassium iodide and bromide of soda combined. The animal got no worse and gradually got better, and is about well now.

While treating case No. 1 I was called to see two other horses at different times with lockjaw. Both had well-developed cases with the jaws almost wholly locked. I advised their owners to kill the animals, which they did.

While talking with Dr. Trumbower, of Illinois, about tetanus a few days ago, he asked me if I had noticed that several cases often come right along together. I told him that I had never thought of it before, but that I had seen only seven cases during the last year, and that five of them had occurred during an interval of two months, which coincided with his statement.

In regard to the antitoxine, I will say that its chief claim is that of a prophylactic rather than a curative agent. I shall keep a supply on hand in future, and will give it a fair test. I do not consider that case No. 2 had anything like a fair test with the antitoxine, and of course the remedy should not be condemned until it has had a fair test and proved worthless. On the other hand, I would advise all who use it and cure the

first case, not to get too elated, but to remember that the case, like case No. 3, might have recovered even without any treatment at all.

The *modus operandi* of using the antitoxine is very simple, and full instructions accompany each bottle. Each bottle contains three grammes of the powder, which is equivalent to 35 cc. of serum. It can be obtained from the New York Biological and Vaccinal Institute, 1, 3, 5 and 7 Ninety-seventh Street, New York, or from Pasteur Anthrax Vaccine Company, 315 Rialto Building, Chicago, and all that are interested can write them for literature and prices.

TETANUS IN A DOG.

By G. J. GOUBEAUD, D.V.S., Brooklyn, N. Y.

On account of its rarity, the following case may be of interest to the readers of the REVIEW. The patient was a pug dog, male, about three years old, well developed and of medium size. He was suffering from an attack of traumatic tetanus, produced, no doubt, by a rusty carpet tack having entered his paw. When I saw him he was in a most pitiable condition: his whole body was as rigid as a board, ears erect, commissure of lips drawn back, showing teeth, mouth discharging saliva, eyes distorted, nose elevated, tail standing almost straight at times, all muscles standing out in cord-like fashion, jaws rigidly contracted. In short, his general appearance was similar to a case of equine tetanus, as is seen previous to death. Any noise or commotion would throw him into a convulsion. While he would be in the convulsion he would become opisthotonic. At times even, if not for the appearance of bubbles at his nostrils, one would think that he was not breathing. In fact he looked more like a frozen dog than an animated creature. He was disinclined to move, and when he did he seemed as if he were walking upon stilts, his limbs were so rigid. When he would become opisthotonic he would form almost a half circle.

Treatment.—I strongly advised the owner to have him destroyed, but to no effect, for as far as I could determine he was unable to take any nourishment whatever. I was asked for something to quiet him, so I prescribed drachm doses of elix. potass. brom., as often as necessary, to be given with a glass dropper inserted between cheek and teeth. Feeling certain that the animal could live but a short time, I told the owner I would not call again. I left, and heard no more until neighbors of my client informed me that my patient was well again.

Thinking that they were mistaken I paid no heed to them. On the 6th of August, or about four months after I had first seen the animal, the owner brought him to be treated for an attack of eczema. I was asked if I knew him, and I answered that I did not. I was then informed that this was the dog that had had lockjaw, and could not possibly live a day or two at the longest. He was so fat that he could hardly run.

ABSENCE OF THE LEFT CAROTID ARTERY.

By WM. H. P. MONK and G. W. MEAD, Jr., Students at the A. V. C.

As students in the dissecting-room of the American Veterinary College, we recently had an opportunity to dissect a curious development of the terminal branches of the common carotid arteries.

On the right side the carotid, at its termination, bifurcated in two branches, one the external carotid, the other a special trunk measuring about three and one-half inches in length, and then dividing into two branches, one the occipital, the other the internal carotid.

On the left side the occipital originated from the parent trunk, in common with the external carotid, but the internal carotid was missing entirely, and no trace of it could be found.

On removing the brain with a portion of the spinal cord, the following condition is observed: The cerebro spinal of the *right side* is quite large, that of the left apparently smaller. Both give their branches to form the lozenge-shaped arrangement from which rise the median spinal and the basilar trunk. This trunk divides anteriorly into branches; one that remains upon the median line, and running forward to the interpeduncular fissure, divides into branches, which go to anastomose with the median cerebral. The other goes to anastomose with the internal carotid of that side (the right), representing evidently the posterior cerebral.

The right internal carotid, after entering the cranial cavity, describes a double S and forms a single trunk, which, running from the right to the left, arrives at the median line back of the pituitary gland and there divides into two large branches, which pass on each side of the gland, run forward, each one forming the median and the posterior cerebral of both sides.

On this surface of the brain there is no appearance of the left internal carotid. The entire circulation was furnished by the internal carotid of the right side.

The subject was a small horse, some eight years old, in fair dissecting condition, and bearing no external indication of this curious abnormality.

DISTEMPER—ITS SEQUENCES AND FATAL
TERMINATION IN A DOG.

BY DR. W. W. YARD, New York City.

I was called to see a very finely bred pug dog, Nov. 2d, with the history that he had distemper about a month ago. Three days ago he began to twitch and jerk and cry out in his sleep. When I saw him there was a constant twitching of all the involuntary muscles, principally of the hind legs, chest and head; loss of appetite, anxious expression, frequent whining, accelerated pulse and respiration normal. Put him under strychnia and stimulants. Called to see him on the 6th, but no improvement; increased the dose of strychnia, and applied slight counter-irritation to spine. Saw patient on the 10th, and found both front legs completely paralyzed; applied electricity daily, which later was increased to twice a day. This gave very good results, so much so that patient could stagger around the room. Electricity was stopped and only strychnia given. I did not see patient again for about a week, but was kept posted every day or so as to his condition; this was such that he was exercised for half an hour daily. Nov. 23d I was sent word that the dog had a fit. When I saw him he was running around the room in a circle as fast as he could, banging against any obstacle. This would continue for about fifteen minutes, when he would fall down exhausted; at these particular times the dog was thoroughly conscious, then all of a sudden, without any warning, he would start up again. I had blankets and pillows put round in a circle, backed up with chairs to prevent him injuring himself, gave a large dose of opium, and in a little while had him quieted, so I left. Two hours later I called and he was running round the same as before, with head hanging down on the left side. Had ice packs put on head and gave morphine; this had some effect, but in an hour he began to bleed profusely from the nose and died in half an hour. Tried to get a post mortem, but could not.

CYSTOCELE IN A COW.

BY DR. MOYLE, Waterford, Wis.

On December 2, 1895, being called to see a cow, I found her fast in stanchions with a large tumor, the size of a child's head, protruding from the vulva. It was dark in color with its surface excoriated. My first impression was that I had to deal with a case of vaginal polypus, but upon close examination it proved to be a cystocele. Upon inquiring into the

history of the case I was informed that it was of twenty-four hours duration and that a neighbor who had been called in tried to reduce it, but had failed, and advised the sending for a doctor, first giving it as his opinion that it was the "mother," meaning the foetal placenta.

After emptying the bladder it was reduced with very little difficulty, and though the time was due for the cow to calve the os uteri not showing any signs of dilating, I sutured the lips of the vulva together, with orders to place the animal in a box stall and to be seen at least every three hours, with the expectation that the cow would calve in about twenty-four hours. Animal recovered, but advised owner not to breed again.

RECTAL TUMOR.

By C. H. MARTIN, D.V.S., Dobbs Ferry, N. Y.

I send you a tumor, removed from a patient, for your examination. The subject was a brown mare, very old, some twenty-two years, still able to do light work.

On the morning of July 17th she was found with a tumor protruding from the anus—this was of the size of a child's head—covered by the mucous membrane, red and somewhat inflamed, and was supported by a pedicle which measured about one inch in diameter. As there was but one thing to do—remove it—I had the mare prepared by a mild dose of physic and laxative food, and after a day or two I applied an elastic ligature, thinking I could slough the tumor off and avoid the possibility of a troublesome hæmorrhage. But finding the next day that the growth, though considerably shrunk, had not sloughed off, and on account of the very offensive odor of this mortified mass, I applied an ecraseur on the ligated peduncle and cut the tumor off. Rectal injections of phenyled water were made several times a day for a few days, the wound healed up readily, and the mare is now at her work again.

[The microscopic examination made by Dr. Becket at the American Veterinary College showed the tumor to be of a melano-sarcomatic nature.—EDITOR.]

STRICTURE OF ŒSOPHAGUS DUE TO INFLAMMATION.

By WM. V. LUSK, Veterinary Surgeon Second Cavalry, Fort Wingate, N. M.

Subject, a black gelding, nine years old, fifteen and one-half hands high, and used for cavalry purposes; was noticed to be off his feed one evening, and that he possessed a slight cough and a slight discharge from nose. Examination re-

vealed swelling and soreness in region of larynx. Temperature and pulse slightly increased, respiration a trifle laborious. Diagnosis, laryngo-pharyngitis. After the examination the animal was placed in as comfortable a stable as possible, blanketed and the usual treatment applied. The next morning he was very much worse. Temperature 104° , pulse weak and almost imperceptible, respiration 40 and very laborious. Swelling about larynx increased and very painful, particularly shown when attempting to swallow, or when throat was manipulated externally. Nose elevated, severe cough provoked into violent fits by attempting to swallow. Appetite impaired and thirst increased, but in attempting to swallow the food and water were ejected through the nasal passages. The swelling had extended about half way down the neck and appeared to be located in the pharynx and œsophagus only. The treatment then consisted of antiphlogistics, warm applications to swollen parts and steam to nose. After five or six days of this treatment the febrile symptoms and swelling had subsided, the cough had about disappeared, but the difficulty of deglutition still remained. The appetite had returned, but the animal could swallow but very little of his food, it being nearly all ejected through the nasal passages, which occurred with every attempt to swallow, with as much ease and regularity as though it was a natural function. At this stage of the disease I was slightly at sea as to the exact nature of the trouble, but felt sure that some organic change had taken place in the pharynx and œsophagus as a result of the preceding inflammation. Everything in my power was done to save the animal, but to no avail. He became entirely unable to swallow, grew poor and emaciated and was actually starving to death. I finally lost hopes and recommended that he be shot to prevent death by starvation, which was done.

At the post mortem examination the œsophagus was found to be about one-fourth its natural size, the stricture beginning at the pharynx and extending the entire length of the tube. The muscular coat was pale and shrunken, and the mucous membrane dry and sticky, and quite firmly adhered throughout the greater part of its length. The digestive organs were free from food except the large intestine, which contained a small amount of ingesta. I mention this case because it is uncommon.

RUPTURE OF THE STOMACH.

BY THE SAME.

Subject, a black gelding, six years old, perfectly sound and never known to be sick. One morning when on a prac-

tice march this horse refused part of his feed, but as he appeared perfectly healthy otherwise, nothing was thought of it, as it is a very common occurrence for young horses to refuse their feed when on their first trip. At six o'clock A.M. he was saddled and started on the march to the next camp. About 8 o'clock A.M. he began to lag, when he was sent to the rear of the column in order that he might take his own time. From that time on he appeared very stupid and occasionally showed signs of colic. His rider, who being a very conscientious man, removed his saddle and equipments and loaded them on a wagon, leading his sick horse the rest of the way to camp, which was reached about noon. The animal then stood perfectly quiet for a few minutes, made several unsuccessful attempts to vomit, and before a dose could be prepared for him he began to tumble and plunge in a frightful manner. Profuse perspiration broke out over the entire body. He bit at his flanks and showed all the symptoms of acute enteritis, except that he made frequent attempts to vomit. In twenty minutes from the time he entered camp he was dead. About three minutes before death the symptoms relaxed and the animal appeared quite easy for a minute or two; then all of a sudden he dropped and after a feeble struggle was dead. At the post mortem examination, which was held immediately after death, a rent about twelve inches in length was found in the greater curvature of the stomach. The edges of the rupture were terribly inflamed and swollen, while the gastric walls a short distance from the rupture appeared perfectly healthy. The stomach contained no food whatever. Considerable masticated food was found in the peritoneal cavity where it had produced terrible inflammation in the parts with which it had come in contact. Tympany was entirely absent.

This makes the second case of rupture of the stomach during the last six months. It is a great mystery to me how it can occur without any apparent cause.

EXTRACTS FROM EXCHANGES.

AMERICAN REVIEW.

INFLUENCE OF FEVER UPON TETANUS.

A. S. Wheeler, V.M.D., New Orleans, La., in the *January Journal of Comparative Medicine and Veterinary Archives*, records the case of a mule affected with apparently fatal tetanus.

the muscles being very rigid and trismus perfectly marked. When death was hourly expected, pneumonia supervened, with extreme pyrexia, which occasioned a revulsion of symptoms, the muscles becoming flaccid, the jaws opening. The patient subsequently died from the gangrenous termination.

PYOKTANIN FOR QUITTOR.

Dr. Wilfried Lellmann, of New York, in an article in the September *Journal of Comparative Medicine*, describes his method of treating cartilaginous quittor with pyoktanin, as follows:

I first apply a lukewarm footbath, of a one per cent. solution of lysol; then, after examining the fistulas with a probe, I introduce a bistoury, provided with a knob at its point, as deeply as possible and make a good cut as the bistoury is drawn outward. If only one fistula is present, I prefer to make a vertical and a horizontal cut, which meet at right angles. If more fistulas are present, I either connect them by cutting or counter-openings, introducing drainage tubes, preferring cutting. Afterwards is introduced a tampon of oakum, saturated with a ten per cent. solution of bichloride, with a well-pressing bandage for twenty-four hours. This enlarges the fistula, and I commence injections of a ten per cent. alcoholic solution of pyoktanin, which seems to have the property of thrusting off tissue which has undergone necrosis. After a few injections, parts of the necrosed cartilage can be removed with forceps. Twelve or fifteen injections are sufficient; during first four or five days twice daily, thereafter once a day, following each injection by tampon and bandage. After injections are completed, wound to be syringed for several days with a solution of iodoform in ether—1 to 7. After this treatment, wound becomes dry and shows no more secretions. To accelerate healing, suppositories are introduced, and kept in position by bandage, consisting of bismuthi dithio-salicylic made with cocoa butter and lanolin. Although there was great lameness in all cases, the horses could be put to work in two weeks and a half.

A NOVEL ACCIDENT.

Veterinary Surgeon Wm. J. Waugh, of the Third Cavalry, U.S.A., reports in the October *Journal of Comparative Medicine and Veterinary Archives*, that he was called in consultation upon a cow which had her œsophagus obstructed in its thoracic portion by a dish-rag; that she was cast and a celluloid

probang inserted, with which the body was dislodged and forced into the rumen. When it was attempted to withdraw the probang, it broke at the joint, and the lower half remained in the gullet. She was released, and on the following morning was recast, the rumen opened in the left flank for five inches, admitting the operator's hand, by which procedure the offending object was found partly in the rumen and partly in the œsophagus. Its removal, and a proper closure of the opening made, enabled the animal to make a good recovery, all of which has caused the doctor to resolve not again to use a celluloid probang.

HYPERTROPHIED CLITORIS.

Dr. A. W. Clement, of Baltimore, uses the pages of the October *Journal of Comparative Medicine and Veterinary Archives* to report the case of a two-year-old hackney filly, which possessed an enlarged clitoris, was served by a stallion, and refusing his further embraces, was turned in a field with broodmares, when she began riding them, going through the motions of copulation, at which time the clitoris would become erect and protrude from the vulva four or five inches, and at the culmination of the act would ejaculate a fluid; all this while she refused the stallion. Amputation of the clitoris resulted in a cessation of her amorous antics, and the wound healed perfectly.

RUPTURE OF THE BLADDER.

Dr. Wm. B. Kille, Woodstown, N. J., records a case of this rare accident in the *Veterinary Magazine*, Philadelphia, the rupture being sufficiently large to admit the index finger, located "*a short distance from its entrance into the vagina.*" It is not clear whether the observer means that the bladder or the urethra was the seat of the lesion. In either case it is a rare accident from straining, which in this instance was undoubtedly the cause, as the mare was found turned partially around in her stall, wedged effectually across it, and showing much evidence of a long and violent struggle to extricate herself. The accident to the bladder was observed at the post mortem, two days after its occurrence.

DR. W. F. LAVERY, Chilicothe, Ohio, has recently accepted the position of Lecturer and Demonstrator of Surgery at the Ohio State University, Veterinary Department. Dr. Lavery is the right man in the right place.

SOCIETY MEETINGS.

NEW YORK COUNTY VETERINARY MEDICAL ASSOCIATION.

The regular meeting of the Veterinary Medical Association of New York County was held on Tuesday evening, Jan. 7, 1896, at 8.45 o'clock, with the President, Dr. Huidekoper, in the chair.

The Secretary being delayed, Dr. Neher was requested to act as Secretary *pro. tem.*, and proceeded by calling the roll, to which the following members responded: Drs. Am-ling, Bretherton, C. C. Cattanach, J. S. Cattanach, J. J. Cattanach, Delaney, Dickson, Ferster, Foy, Gill, Hanson, Huidekoper, Neher, O'Shea and Sherwood.

The President appointed to act as a Board of Censors, H. D. Hanson, J. S. Cattanach, J. E. Ryder and J. H. Ferster; and as Committee on Legislation, Arthur O'Shea, J. E. Ryder, S. S. Field, Herbert Neher and F. W. Turner.

There being no papers, Dr. Sherwood spoke a few words on mange; and also agreed to read a paper at the next meeting.

Dr. Ferster then reported a case of azoturia, with partial paralysis in the hind leg as a sequelæ, and questions if case will recover.

Dr. Amling reported two similar cases.

Dr. Neher reported six cases of azoturia with similar symptoms in fore-legs.

At this point the Secretary arrived and took his chair, and a general discussion on azoturia and its treatment continued.

Dr. Ferster asked the chair for his after-treatment in azoturia when any of the above sequelæ remained; and he recommended full doses of potassii iodidum for a time and turning the patient out.

Drs. Neher, O'Shea and J. S. Cattanach gave their views on treatment in different stages of the disease.

The President then asked the meeting their pleasure in regard to having the minutes of the previous meeting read, now that the books were on hand, and it was moved and seconded that it be deferred until the next meeting.

The question of tetanus and its treatment next came up, and was discussed generally by the members.

Dr. O'Shea reported recovery after the use of nicotine in full doses on the tongue, followed by digitalis and whiskey.

Dr. J. S. Cattanach reported a case in which recovery followed one injection of three grains of morphine.

Dr. Ellis reported a case in which all the characteristic symptoms were well marked, but not far advanced, in which recovery followed one injection of 25 cc. tetanus antitoxin.

Moved and seconded that the discussions close. Carried.

Moved and seconded that the meeting adjourn. Carried.

The regular meeting of the Veterinary Medical Association of New York County was held on Tuesday evening, Feb. 4, at 8.30 o'clock, with the President, Dr. Huidekoper, in the chair.

On roll call the following members responded: Drs. Ameling, C. C. Cattanach, J. S. Cattanach, J. S. Cattanach, Jr., Dickson, Delaney, Ellis, Ferster, Foy, Giffen, Gill, Huidekoper, Hanson, Jackson, Lamkin, Lellman, MacKellar, Neher, O'Shea, Ryder, Serling and Turner.

The minutes of the last meeting were then read and approved. The minutes of the December meeting were then read, and, after slight correction, approved.

Dr. Gill, Chairman of the Board of Censors, reported that the board recommend that Dr. Johnson be notified to be prepared to meet charges at the next regular meeting.

It was then moved and seconded that the Secretary be authorized to formulate charges against S. K. Johnson, and forward same to him, and that the Secretary notify Drs. Turner and Finlay to have all their evidence ready to be acted upon at the next regular meeting.

The Board of Censors also recommended that a resolution be sent to the Board of Health to the effect that all appointments for milk or meat inspectors be made from graduates of veterinary colleges. Moved and seconded that the President appoint a committee of five to attend to it. Carried.

The Board of Censors also recommended that the Society endeavor to hold its meetings at the Academy of Medicine, suggesting that such a course would add to its prestige. It was then moved and seconded that the President should appoint a committee of three to ascertain the cost of a room in the Academy of Medicine, suitable for the Society's meetings, and report at the next meeting. Carried.

Dr. O'Shea, Chairman of the Committee on Legislation, then gave a lengthy report of the able work done by that committee, assuring the members that the extension bill for registration was killed at least for this year, and that the jury bill would probably be through by the next meeting. It was

then moved and seconded that the report be accepted and placed on file. Carried. Moved and seconded that a vote of thanks be extended to the Committee on Legislation. Carried.

Dr. Lellman then read a paper on "Calcified Nodes in Lungs of Horses," which was afterward discussed by the members.

The President then appointed the following committees: As a committee to draft resolutions to the Board of Health, in reference to the appointment of meat inspectors, Drs. H. D. Gill, J. S. Cattanach, H. Neher, J. E. Ryder and F. W. Turner. As a committee of three to ascertain the cost of a room at the Academy of Medicine, Drs. H. D. Hanson, J. H. Ferster and T. Delaney.

Moved and seconded that a vote of thanks be extended to Dr. Lellman for his paper. Carried.

Adjourned..

R. W. ELLIS, D.V.S., *Secretary*.

ALUMNI ASSOCIATION OF AMERICAN VETERINARY COLLEGE.

The members of this Association will meet in the lecture-room of the College Building, 141 West 54th Street, New York City, on Wednesday, March 25, at 2.30 P.M., and a large attendance is earnestly desired. In the evening they will attend commencement exercises of the college at Chickering Hall, after which they will adjourn to Clark's, in 23d Street, where a programme of great interest will be delightfully intermingled with much that is of value to material life and lots of good fellowship.

OHIO STATE VETERINARY MEDICAL ASSOCIATION.

The thirteenth annual session of the Ohio State Veterinary Medical Association, convened in the library of the Park Hotel, Columbus, Ohio, on the evening of January 13, 1896.

The meeting was called to order by the President, Dr. J. D. Fair, at 8 P.M., and he opened the meeting with a few very appropriate remarks, calling attention to the goodly number present, to the fact that a committee would report some important amendments to our State veterinary law, which he hoped the Association would give especial attention to, and several other minor matters.

Roll called showed the following veterinarians to be present: F. E. Anderson, Findley, O.; G. W. Butler, Circleville; H. M. Ball, Columbus; S. E. Bretz, Little Sandusky; J. H. Blattenburg, Lima; F. B. Cotton, Mt. Vernon; L. W. Carl, Columbus; G. W. Cliffe, Upper Sandusky; P. A. Dillahun,

Springfield; J. D. Fair, Berlin; J. E. Foster, Coshocton; O. D. Franks, Springfield; W. H. Gribble, Washington C. H.; T. B. Hillock, Columbus; W. R. Howe, Dayton; C. V. Hedges, Circleville; C. E. Leist, Columbus; J. C. Meyer, Cincinnati; S. D. Meyer, Wilmington; J. A. Meagher, Glendale; J. V. Newton, Toledo; J. O. Price, Lancaster; Walter Shaw, Circleville; E. H. Shepherd, Cleveland; S. S. Snyder, Cincinnati; W. J. Torrence, Cleveland; W. E. Wight, Delaware.

Minutes of the last meeting read and approved. The chair ruled that the first order of business was the nomination and election of officers, and called for nominations. For President, Drs. Hillock and Howe nominated Dr. E. H. Shepherd; no opposition; the rules were upon motion suspended and the doctor declared elected. Drs. Hillock and Torrence nominated Dr. W. E. Wight for First Vice-President; no other nominations, the rules were again suspended and the nominee declared elected. For Second Vice-President, Drs. Butler and Wight nominated Dr. W. R. Howe, no opposition; the doctor was declared under suspension of the rules to be elected. Drs. Torrence and Carl nominated Dr. W. H. Gribble for Secretary, and Drs. Howe and Shaw nominated Dr. T. B. Hillock for Treasurer; in both cases no other nominations were made, so under suspension of the rules both were declared elected.

President J. D. Fair then stated that the officers of this Association for the year 1896, were: President, E. H. Shepherd; First Vice-President, W. E. Wight; Second Vice-President, W. R. Howe; Secretary, W. H. Gribble; Treasurer, T. B. Hillock.

Next order of business was the presentation of applications for membership; and the following names were read by the Secretary, each of which was voted upon separately, and each one declared elected to membership: Dr. P. A. Dillamunt, Springfield, O. (Ontario Veterinary College, 1893), vouched for by Drs. S. E. Bretz and T. B. Hillock; Dr. Sidney D. Meyers, Wilmington, O. (Ontario Veterinary College, 1894), vouched for by Drs. Walter Shaw and W. R. Howe; Dr. G. W. Cliffe, Upper Sandusky, O. (Ohio Veterinary College, 1892), vouched for by Drs. F. E. Anderson and S. E. Bretz; Dr. Louis P. Cook, Cincinnati, O. (Ohio Veterinary College, 1895), vouched for by Drs. W. R. Howe and J. C. Meyer, Jr.; Dr. O. D. Franks, Springfield, O. (Ontario Veterinary College, 1885), vouched for by Drs. T. B. Hillock and W. J. Torrence.

The Secretary introduced each new member present, who in turn responded with a few well chosen remarks.

A large amount of correspondence was now read by the Secretary, some of the communications bringing out considerable discussion, as they were thought to be out of place, and that the writers should be criticised. Almost every member present took part in this discussion; but the matter was finally disposed of satisfactorily.

Dr. G. W. Butler now read a carefully prepared paper on "The Use of Anæsthetics in Veterinary Practice,*" which was well debated and ably defended.

Dr. Shaw: I give chloroform rapidly and but little at a time, have performed the operation for roaring by using $\bar{z}$ iss. I have tried to kill horses by chloroform inhalation, but so far have failed.

Dr. Cotton thought veterinarians should use anæsthetics oftener, to use them at all times when possible to relieve pain, one trouble being that people would not pay for it. He gave chloroform with plenty of air.

Dr. J. C. Meyer: I believe that the use of anæsthetics has marked a very great advance in veterinary practice; my patrons approve of it. Years ago I used the method, until an animal fractured his spine during the struggles, but lately I have again gone to using it, but in a different manner. I now give chloral hydrate, $\bar{z}$ i, previous to inhalation of the chloroform. I then put the animal in slings, lifting almost off the floor, administer the anæsthetic, then let it down. I give chloroform to dogs by tying a cloth over some vessel containing a sponge (say a tumbler), then cutting a hole in the cloth large enough to get the dog's nose in, this keeps the animal's eyes away from the drug.

Dr. W. R. Howe: I think the mixture known as the A. C. E. mixture is best for horses, but is too slow in its action for dogs. I usually put dogs under the influence of ether, then keep them so with the A. C. E. mixture. I usually give horses chloral hydrate, $\bar{z}$ iss; simple syrup, $\bar{z}$ iij; water, Oiss, previous to using any anæsthetic, and I believe it acts well, and saves chloroform, etc.

Dr. W. J. Torrence: It may be that I am a crank on the use of cocaine, but I perform a goodly number of operations with the use of it. I firmly believe that a large number of our cases of chronic cough is due to the administering of chloral and its irritant action. I had several cases die where chloral had been used, and on post mortem the mucous

* Printed elsewhere in this number.

lining of the œsophagus and stomach were found eaten off in patches. When using it now, I give it in Parke, Davis & Co.'s capsules.

Dr. E. H. Shepherd: I have never failed to kill a horse with inhalation of chloroform, although in one case, I confess, I used two pounds. It seems to me that there are a great many cases where we should consider the suffering of the animal during the administering of the anæsthetic, and the effect following its use. Are there not many operations where the operation itself causes less pain than the anæsthetic? One can be too cruel in the use of the twitch. I am satisfied that chloral is often given so strong as to cause sloughing of the mucous membrane.

Dr. Howe: I don't believe sloughing or even irritation will take place if one and a half pints of water or three ounces of simple syrup be added to each dose of chloral.

Dr. Butler: I believe Dr. Meyer should have discontinued the use of his confining apparatus, instead of the use of the chloroform; the old English hobble, as it is called, was never fit to throw or confine an animal. As for the patrons not desiring to pay for the use of anæsthetics, personally I shall use them in my practice for my own personal feelings and benefit, even if I have to perform operations at the same price as I would without it.

Moved by Dr. Shepherd, seconded by Dr. J. C. Meyer, that the discussion close, the essayist be given the thanks of the Association, and that the essay be turned over to our Secretary for publication. Motion carried.

By the Chair: At our semi-annual meeting, a committee was appointed to draft amendments to the present State veterinary law, and present them to this meeting for consideration. The Secretary will now read the amendments, when the whole will be turned over to you for discussion.

The Secretary first read the law, section by section, just as it now reads, then read the proposed amendments. The discussion which followed was naturally a lengthy one; but it was marked by a unity of action, by the fact that concessions must be made, which, had it been displayed eight years ago, Ohio would have been to-day in the front rank of States having veterinary medical laws. By practically unanimous action, it was decided to be unwise to ask for too much legislation at the present session of the legislature, contenting ourselves if we could secure an amendment compelling all those eligible to practice under the law to register with the Secretary of the Board of Veterinary Examiners, within a given

length of time, their name, place of practice, whether or not a graduate, if so from what school or college, etc. A committee composed of Drs. W. H. Gribble, W. R. Howe, and J. D. Fair was appointed to wait on the State Board of Veterinary Examiners, which hold a session in the State House to-morrow at 10 A. M., and ask their aid in securing these amendments. This State Board contains the Secretary of the State Board of Health and the Secretary of the State Board of Agriculture, so their aid would be of great assistance to us.

It being now after midnight, the meeting adjourned to meet again to-morrow morning at 8 A. M.

SECOND DAY, JANUARY 14TH.

Meeting called to order by President Fair, at 8:15 A. M.

The chair appointed as a committee to audit the books of the Association, Drs. G. W. Butler, S. E. Bretz, and W. Shaw.

Moved by Dr. Howe, seconded by Dr. Butler, that hereafter the Secretary send no invitation to our meetings to suspended or expelled members. This motion had especial reference to a communication received from a member who, it was claimed, withdrew to save himself from being expelled. This brought out a debate, somewhat personal at times, but which showed that the motion would not accomplish that which it was desired, as one withdrawn member was on equal footing with another, no matter what caused the withdrawal. As an amendment, Dr. Wight moved, and Dr. Cliffe seconded, that the Secretary continue to send invitations to all veterinary graduates in the State of whom he had the address. Amendment carried.

Drs. Gribble, Howe, and Fair now left the meeting to go to the State House to confer with the State Board of Veterinary Examiners.

Moved by Dr. W. Shaw, seconded by Dr. Butler, that we now proceed to select a meeting place for our semi-annual meeting.

Dr. G. W. Cliffe, named Columbus, which was ably supported by Dr. W. J. Torrence, and finally Columbus was selected, the time to be during the mid-summer race meeting.

The committee appointed to audit the books now reported to wit:

We, your committee appointed to audit the books of the Ohio State Veterinary Medical Association, beg leave to report that we find the books kept in good order, and that we find a balance in the hands of the Treasurer of \$294.54.

WALTER SHAW, G. W. BUTLER, S. E. BRETZ, *Committee.*

Dr. S. E. Bretz now read a paper reporting the following cases:

CASE NO. 1.—Subject was a chestnut gelding owned by R. Swihart, of Little Sandusky. The latter part of October the owner came to my office and said that he had a three-year-old horse that did not seem to thrive well, the history being as follows: Horse worked all right, was a free driver, would eat well, lick the manger, gnaw the fence, and would lie down more than his other horses did; the horse had done no good for six months. I diagnosed the case as chronic indigestion, and gave treatment for the same, and told the owner to bring the horse down to my office if he was no better when the medicine was used. On Nov. 2d, I was requested to see the horse, as he was unable to move; on my arrival I found the horse lying flat on the ground, and occasionally would rise, paw with one forefoot, look around at side, then lie down, and remain there for half hour or more. The pulse and temperature were normal, but the bowels had not moved that day. I diagnosed it as a case of impaction, gave a pill of aloes, calomel, nux and belladonna in small doses every two hours, and left chloral hydrate to keep down severe pain, should it arise, and told the owner I would be back the next morning. On my return, found the bowels had responded to the action of the cathartic, but all other symptoms were the same as the day before. I saw the horse in the evening, and found him the same. I then told the owner that I suspected an abnormal growth located in the abdominal cavity. Horse died the next day, with all the symptoms of enteritis. Post mortem revealed a tumor about the size of a man's head located in the mesentery of the small intestines, to which the walls of the intestine firmly adhered, but their caliber was not cut off. This tumor was hard, and cut almost like cartilage, and contained about two ounces of pus. This is the third case of this kind that I have seen, and all of them in horses less than four years old.

CASE NO. 2.—On Nov. 10th, I was called to see an Ambassador mare, owned by T. C. Daughimer. Mare had had no trouble to foal, but post-partem hæmorrhage followed. Gave ergot every half hour until three doses were given; inserted cloths into the uterus to cause uterine contractions and let them remain there for an hour; applied bandages to the abdomen, and the hæmorrhage was stopped. The next day I was sent for, saying the mare would not eat. I found her with back arched, looking around to side, stamping with hind feet and frequent attempts to urinate. I discovered I had a case of metritis to deal with. Gave laxatives, morphia alternately with hyposulphite of soda, and injections of a weak

solution of carbolic acid. The mare seemed to recover. In a few days I was again called, the owner saying the mare was doing well except occasionally a gush of blood would come from the vagina. On examination at the posterior-inferior part of vagina, I found an opening that would admit a half inch rubber tube to the extent of fifteen inches. The sinus was surrounded by a hard swelling leading upward and forward along the left side of the wall of the vagina, and terminating in an enlargement about six inches in diameter on the left side of the uterus. By pressure on the enlargement, following the sinus back, I removed large quantities of clotted blood. I realized that I had a case of secondary hæmorrhage, gave tonics, with injections of weak solution of carbolic acid twice daily. Mare has recovered, with no trace of enlargement in the uterus nor vagina.

Considerable discussion followed the reading of these two cases, which was participated in by Drs. Wight, Torrence, Shepherd and Butler.

Motion made by Dr. Wight, seconded by Dr. Torrence, that Dr. Bretz be thanked for his paper, and the same handed to the Secretary for publication. Carried.

Dr. T. B. Cotton, as Chairman of the Committee on Veterinary Education, gave a verbal report, which was well received and attentively listened to.

A motion was made, duly seconded, and on vote declared carried, that the report of Dr. Cotton be accepted and the committee continued. Part of this motion is necessarily null and void, as our by-laws give the incoming President the privilege of appointing some committees, amongst them the Committee on Veterinary Education.

Dr. Torrence introduced the subject of relieving a gas-distended stomach by means of a nasal probang, or by direct puncture of the stomach with a trocar. A difference of opinion existed as to whether it was possible to use a trocar in this manner, some thinking it impossible, while others thought it not fraught with any very great degree of danger. Try it, is our advice.

Dr. G. W. Cliffe related a very interesting case, in which, at post mortem, there was found a dilated and diseased portion of the œsophagus; near its termination at the stomach. The dilated sac was capable of holding a half gallon; and the passage from this portion into the stomach appeared completely closed. The diseased portion had the appearance of being cancerous.

Dr. E. H. Shepherd reported a peculiar case of a spitz dog

that exhibited the trait of catching flies even when no flies were about. Its appetite was good, yet it became quite thin in flesh. It finally recovered under treatment, tonic and alterative.

Dr. Torrence mentioned the case of a dog with internal canker of the ear, from which he removed the petrous portion of the temporal bone, and the operation was followed by recovery.

Dr. Shaw reported several interesting cases in dogs.

Dr. Butler related his experience in the operation of gastro-hysterotomy on sows, having had two successful operations out of a number performed.

Dr. Cliffe had so operated on nineteen sows that had lived; and he believed there was less danger in the operation than in trying to remove the pigs with sharp hooks.

The committee to confer with the Board of Veterinary Examiners now returned. Dr. Gribble reported having met with them, being accorded a very kindly reception. He stated they had explained that this Association was unanimous on the subject of amendments to the law, and desired the aid of the Board in trying to obtain them. Previous to our leaving this meeting this morning, although the committee left uninstructed, there was considerable talk as to the legality of the present veterinary law; until a majority of us almost believed it unconstitutional on account of a three years clause in Sec. I., and rather than proceed with an illegal law a great many thought that the better way out was to proceed anew, by trying to enact a law or get an amendment to the present one, allowing *all* those in practice to continue by simply registering within some given length of time; but compelling all those *entering* practice after the passage of the law to pass the examination of the State Board of Examiners, no matter where or from what school or college they may have received their diplomas; and that no others, except those having diplomas, could *enter* practice at all after the passage of the law. Our greatest opposition to the present law comes from an unexpected quarter, not from the empirics, but from those graduates who graduated previous to the passage of the law, but within the previous three years limit, the majority refusing to go before the Board of Examiners, and, in fact, organizing to fight the law. They being fresh from college, one could reasonably expect them to pass a good examination, especially as the Board of Examiners adopted a rule to govern themselves for a reasonable time, viz., asking only an average of sixty per cent. on examination, which rule was publicly

known; and we had expected these new graduates would avail themselves of the law, if only for the general good of the profession they had adopted as a means of livelihood. Of course those who well knew they were unfit to practice, and knew their inability to pass any examination, no matter if they *had* a diploma, we expected opposition from; but when some of our best young graduates joined this opposition and lowered their dignity to associate with the veriest quacks, for the sake of fighting a form of examination which they themselves could readily pass, we are at a loss for a reason. It is well known that no law can be obtained to elevate our profession that will not cause some few of us inconvenience, and allow some others to practice who are totally unfit; but one would expect that the graduate fresh from college would be the last to oppose a simple professional examination, for of what use is a law without examination, when as much difference exists in the curriculum of our so-called veterinary colleges as between a country district school and a normal college. These facts were stated to the examining board and we were informed at this conference that the Attorney-General, an ex-Attorney-General and an able lawyer, who is a State Senator, had all given as their opinion that the law was constitutional just as it now read, and a suggestion was made that if we had our doubts, why not test it in the courts; surely there is material enough for a case; in fact, why not have a friendly test, by some veterinary surgeon being sued, who is willing.

Dr. Carl moved, and Dr. Meyer seconded, that the report of the committee be accepted and the committee continued. Motion carried.

Dr. Fair thought we should now watch the laws, and as soon as we saw our amendment mentioned every member of this Association should see his representative and State Senator and work on them in favor of our law.

Moved by Dr. Howe, seconded by Dr. S. Meyer, that this Association, through its Secretary, request the Ohio Board of Veterinary Examiners to publish in our veterinary journals, or furnish our Secretary, for publication, the names and residences of all persons submitting to their examinations, and the result of the same. Motion prevailed.

Motion was made by Dr. Cotton, seconded by Dr. Howe, that the Secretary be instructed and empowered to purchase a new satchel, in which to carry the Association's books and papers. Carried.

Dr. Gribble made the motion, and Dr. Carl seconded, that

Dr. Hillock be appointed a committee of one to convey the thanks of this Association to the proprietor of the Park Hotel for his kindness in granting us the use of the library for the holding of the session. Carried.

No other business appearing, the Association adjourned to meet in Columbus during the mid-summer race meeting, the Secretary to notify each member of the date whenever convenient.

This session was characterized with a most excellent meeting-place, almost perfect unanimous action on the legislative question, and a most enjoyable time both socially and professionally. Not a person present but who considered himself well repaid for time and expense in coming.

President Dr. E. M. Shepherd appointed the following committees for 1896:

Committee on Contagious Diseases: Drs. J. D. Fair, Walter Shaw and L. W. Carl.

Committee on Veterinary Education: Drs. J. C. Meyer, Jr., G. W. Butler and S. D. Meyer.

The Secretary desires to call the attention of all the members of committees to the fact that they have important duties to perform, and that the Association expects them to perform them, and also expects reports on the subjects.

W. H. GRIBBLE, *Secretary*.

WASHINGTON, C. H., O., Feb. 13, 1896.

To the Veterinarians of Ohio:

At the last meeting of the Ohio State Veterinary Medical Association it was voted to meet in semi-annual session in Columbus, Ohio, during the summer race-meeting. Since then it has been publicly announced that the United States Veterinary Medical Association would meet in annual session in Buffalo, New York, on Sept. 1st, 2d and 3d, and we have received several letters from *our* members asking if Ohio's semi-annual session could not be postponed to the same place and time as the U. S. V. M. A., where we could reap much benefit, renew acquaintances, etc., some thinking they could not attend two different meetings this summer. Will all the members of the Ohio Association who see this notice kindly write the Secretary, stating their views on the matter?

W. H. GRIBBLE, *Secretary*.

MAINE VETERINARY MEDICAL ASSOCIATION.

The semi-annual meeting of the Maine Veterinary Medical Association was held at the Preble House, Portland, Jan. 14.

Among the members present were: Drs. George H. Bailey, Deering; H. H. Choate, Lewiston; F. W. Huntington, Portland; W. S. Lord, Portland; A. Joley, Waterville; A. Long, Lewiston; C. W. Purcell, Biddeford; F. M. Perry, Houlton; F. L. Russell, Orono; W. L. West, Ellsworth.

The following officers were elected for the ensuing year: President, D. F. Russell, Orono; Vice-President, F. W. Huntington, Portland; Secretary, W. L. West, Ellsworth; Treasurer, A. Joley, Waterville. Executive Committee—H. H. Choate, Lewiston; F. W. Huntington, Portland; F. L. Perry, Houlton.

Dr. F. L. Stevens, of Farmington, was elected to membership.

An interesting paper on "Hæmorrhagic Enteritis,"* was read by Dr. W. L. West, of Ellsworth, and discussed by Drs. Purcell, Bailey, Russell and Choate.

Dr. George H. Bailey read an article on the tuberculin test as applied to animals, which was discussed at some length by the various members, also the different preparations of tuberculin in use. Koch's tuberculin was adopted by the society as being the most reliable in use.

It was unanimously voted that the price for applying the tuberculin test should be \$1.50 per head in lots of twenty head.

The meeting adjourned to meet in Lewiston July 15th.

W. L. WEST, *Secretary*.

NEW HAMPSHIRE VETERINARY MEDICAL ASSOCIATION.

The ninth meeting of the New Hampshire Veterinary Medical Association was held in the Eagle Hotel, Concord, on February 4th.

The meeting was called to order at 11.30 A.M., by Dr. Russell. Minutes of the previous meeting were then read and accepted.

The following answered to the roll call: Drs. Russell, Macguire, Abbot, Wilkinson, Lilico and Pope.

Dr. Russell then made a short address concerning the usefulness of the Association, the necessity of attending its meetings, etc., and moved that the by-laws be changed relative to the time of meetings, making them quarterly instead of monthly; seconded by Dr. Wilkinson and carried unanimously.

The Secretary was instructed, by vote of the Association, to read the communication from the Army Legislation Committee of the United States Veterinary Medical Association,

* Will be published in the April REVIEW.

including letter, bill proposed and reasons why the veterinary service of the army should be improved. The subject being fully discussed, the Secretary was asked to send resolutions and copy of the bill to each and every member of Congress coming from New Hampshire.

No further business being before the meeting, Dr. Russell was called and read a very interesting paper on "Hereditry," treating the subject from a human as well as an equine standpoint, the simile rendering the subject very instructive. Discussion followed, bringing out many interesting points. Meeting adjourned at 1.30 P.M. until May.

L. POPE, JR., M.D.V., *Secretary*.

INDIANA ASSOCIATION OF VETERINARY GRADUATES.

This Association met in the parlors of the Hotel National, Muncie, on December 10th. The President, Dr. J. E. Cloud, being absent, the Vice-President, Dr. F. W. Meyers, took the chair, the following members being present: F. A. Bolser, New Castle; J. W. Klotz, Noblesville; F. W. Anderman, Hartford City; J. S. Culvert, Portland; O. L. Boor, Muncie; J. C. Rodgers, Anderson. Visitor, A. W. Bitting, of Perdue University Veterinary Department.

The minutes of the previous meeting were read and approved and the reports of the Secretary and Treasurer were also read and approved.

On motion, the Association proceeded to the election of officers for the ensuing year, which resulted as follows: Dr. F. A. Bolser, President; Dr. F. W. Meyers, Vice-President; Dr. O. L. Boor, Treasurer; Dr. J. C. Rodgers, Secretary. Board of Censors, Drs. Culvert, Klotz and Anderman.

On motion, the name of Dr. A. W. Bitting was proposed for membership, and he was elected, after which we repaired to the dining-room of the hotel, where a very sumptuous repast was enjoyed, not only by the members, but by the guests, who were Drs. Green, Going, Jackson, and two newspaper reporters, all of Muncie, after which the Secretary was appointed toastmaster. The following gentlemen responded: "Mine Host," O. L. Boor; "Our New President," F. A. Bolser; "Our Live Stock Sanitary Commission," F. A. Bolser; "The Changes of One Hundred Years," F. W. Meyers; "The V. S.'s Relation to the M. D.," J. W. Klotz; "What I Know About Veterinary Legislation," F. A. Bolser; "My Experience in Veterinary Education," A. W. Bitting; "The Press," J. S. Culvert; "Our Secretary for 1896,"

J. C. Rodgers. It is needless to say every person present enjoyed themselves.

The meeting was called to order on the 11th by the President.

On motion, the Secretary was instructed to write Dr. J. W. Lafever in regard to violating Section 6, Article IX, of our By-laws.

On motion, the Association as a body were willing to assist Dr. Bitting in promoting the advancement of veterinary science by reporting all cases to the doctor, who will furnish blanks for the same.

The resignations of the following gentlemen were read and accepted: J. E. Cloud, L. Hoover, Richmond, and J. W. Cook, Goshen.

On motion, we meet in Lafayette in July next.

The following gentlemen proposed papers for our next meeting: O. L. Boor, F. W. Anderman, J. S. Culvert, A. W. Bitting, J. W. Klotz, W. B. Wallace, and C. F. Bell.

Adjourned.

J. C. RODGERS, *Secretary*.

GERMAN VETERINARY SOCIETY OF NEW YORK AND VICINITY.

The German Veterinary Society held its regular monthly meeting, February 11th, in Newark, the President, Dr. L. R. Sattler, occupying the chair.

There were present, Drs. Sattler, Serling, Leiss, Turner, Ogden and Ancker.

After the regular business was finished, different cases from practice were reported and discussed, after which a paper on "Endocarditis,"* was read by Dr. Edwin Ancker.

The next meeting will be on Wednesday, March 11th, in Newark, at the office of Mr. Charles Reichle, corner of Bowery and Freeman Street.

EDWIN ANCKER, *Secretary*,
167 West Thirty-first Street, New York City.

VIRGINIA STATE VETERINARY MEDICAL ASSOCIATION.

The fifth regular meeting of this Association was held in Richmond, Jan. 2, in the Veterinary Hospital of Dr. W. H. Harbaugh. The meeting was called to order at 10 A. M., by the President, Dr. Harbaugh.

After the reading and approval of the minutes of the previous meeting, the report of the Board of Censors was read. Dr. Thos. M. Sweeney, V.S., of Richmond, and Dr. W. F. Henderson,

* Will be published in the April REVIEW.

M.D., of Blacksburg, were elected to membership. Dr. Geo. Ben. Johnston, M.D., of Richmond, was elected an honorary member.

The Committee on Jurisprudence and Legislation, through their Chairman, reported as follows:

To the Virginia State Veterinary Medical Association:

GENTLEMEN:—On Sept. 25, 1895, a negro blacksmith was tried in the police court of the City of Richmond, on the charge of cruelty to an animal, for having burnt a horse's mouth with a heated iron to cure the lampas.

The case was prosecuted by the Society for the Prevention of Cruelty to Animals, and was stubbornly contested by the defense. Five veterinary practitioners, three medical doctors, one dentist, and two horsemen testified that the practice of burning for the condition called lampas was cruel and unnecessary. Many other witnesses were present to testify to the same effect, but the justice said the prosecution had introduced enough evidence.

The owner of the horse that was burnt testified that the horse improved after the burning; three liverymen testified that the operation was beneficial, and that after horses were burnt they always regained their appetites. The defendant testified that he had burned between 1,500 and 2,000 and had never seen any bad results.

Counsel for the prosecution requested that if a fine was imposed on the defendant, the fine be remitted, as this was only intended as a test case.

In summing up, the justice said he must be governed by the expert evidence, and was compelled to decide that the operation was cruel, but as it had been a long-established custom, and as he did not think the blacksmith intended any cruelty, he would discharge him, but any other cases brought before him would be tried on their merits.

As this was the first case of the kind ever prosecuted in this State, I consider the decision of the court fair and just. I also consider it a great victory for the veterinary profession, as it will effectually check the barbarous practices of the many pretenders who dupe the ignorant horse-owners.

I reported this case to the President of the S. P. C. A., with the request that a test case be made of it, with the hope that a favorable decision could be obtained in order to stop a severe infliction of pain for an entirely imaginary condition. Ever since I have been a veterinarian I have carefully looked for a disease of the bars of young horses' mouths, and I have never seen in the condition called lampas the slightest evidence of disease. No such disease exists; the condition is normal and the ignorant should be taught not to interfere with it. Abnormal condition of the gums that require attention does not necessitate any interference with the bars. We should cease to use the term "lampas," even in connection with disease of the gums.

Respectfully, W. H. HARBAUGH.

From this same committee a report was made upon the subject of legislation, which elicited a great amount of discussion. The action of all the States to the north of Virginia in the matter of stringent veterinary legislation, by driving a horde of quacks into this State, forces upon this Association the careful consideration of this question.

It was finally agreed to ask the legislature now in session to give us a law creating an examining board. A law practically the same as that governing the practice of medicine in this State, modified to meet the requirements of the veterinary profession.

A recess was taken to attend a clinic at the Old Dominion Hospital, by invitation of Dr. Geo. Ben. Johnston. The Associa-

tion was delightfully entertained by the doctor in the hospital amphitheatre by an entertaining talk upon the various intricacies of aseptic and antiseptic surgery, illustrating his remarks.

Afterward the Association was entertained as the guests of Dr. Johnston in the faculty-room of the Medical College of Virginia, at an elegant collation.

The Association re-convened at 5.30 P.M., and the Committee on Resolutions reported as follows:

Whereas, Murrain, or Texas cattle fever, exists in this State annually to a much greater extent than is generally known, destroying many cattle during certain seasons of the year, and almost threatening ruin to the cattle industry of the State, and

Whereas, Tuberculosis exists to an alarming extent among dairy herds of the State, as proven by the best known means of diagnosis, viz., the tuberculin test; as an instance, one herd of one hundred and thirty-four head of cattle in the vicinity of Richmond, formerly supposed to be healthy, tested by experts from the U. S. Department of Agriculture, showing 71 per cent., or ninety-five head diseased, and

Whereas, Virginia has no efficient laws for the control of these or any other infectious diseases of animals, and

Whereas, The U. S. Department of Agriculture has no power to interfere with the traffic of the live-stock of the State, except in so far as the Inter-State Commerce Law is concerned, and

Whereas, It seems to be the tendency on the part of certain governmental and other officials to suppress facts relating to the above mentioned disease, and

Whereas, The stock-breeders of southwestern Virginia have met and appointed a committee to secure adequate laws for the control of these and other infectious diseases of animals, and

Whereas, Said stock-owners have recognized the fact that the veterinary profession of this State is the proper source from which to obtain reliable information in regard to animal diseases in this State, and has therefore appointed one of our members as a member of their committee, and furthermore, said committee asks for the assistance of our Association; therefore be it

Resolved, First, that we fully realize the necessity of proper laws to control and prevent the spread of contagious diseases, and that we deplore the secrecy practiced in such matters, at the expense of public funds and to the detriment of the true interests of the live stock industry;

Second, that this Association aid the committee of stock-breeders from southwestern Virginia in any way within its powers so to do;

Third, that a copy of these resolutions be sent to said committee of stock-breeders, and that these resolutions be spread upon the minutes.

W. T. GILCHRIST, *Chairman*.

After considerable discussion, the resolutions were adopted.

The time having arrived for the reading and discussion of papers, Dr. Faville, of Norfolk, read a paper on "Osteoporosis,"* and was followed by Dr. M. D. Hoge, Jr., M.D., of Richmond, with a paper on "Bone Softening."* The discussion following the reading of these papers was of considerable interest to the members. Dr. Hoge's paper was beautifully illustrated with microscopic specimens of affected bone, and the complete collection of specimens of osteoporosis and actinomycosis shown by Dr. Harbaugh fitted the papers well.

* These papers will be published in the April REVIEW.

Dr. Harbaugh read a paper on "Texas Fever,"* which was listened to with great interest. The specific micro-organism was nicely shown, as were also the ticks found upon the cattle affected. The discussion of this disease was of peculiar interest to the members, because of the location of the government quarantine line across the State. The results of experiments and observations to be made by Drs. Harbaugh and Niles during the next season will be awaited with interest.

At nine o'clock the Association adjourned to meet around the banquet table at Evenson's as the guests of Dr. Harbaugh. The hospitality of our President was greatly enjoyed.

At 10.30 P.M. the Association was called to order again to listen to a paper by Prof. E. P. Niles, of Blacksburg, Va., upon "Immunity."* This was followed by a general discussion of the subject of serum therapy.

After extending the thanks of the Association to Dr. Geo. Ben. Johnston for his very profitable and pleasant entertainment, and instructing the Secretary to compile the proceedings and papers of the various Association meetings for publication, the Association adjourned at two o'clock A.M., January 3, to meet in Norfolk in June.

The Association has grown from a weakling of two years ago to a healthy organization, and all the members realize that the mutual benefit derived from our meetings is without measure.

While in Virginia at the present time there is no legal veterinary profession, we hope and know that the influences emanating from our Association will ultimately secure for us the recognition that is our due.

GEO. C. FAVILLE, D.V.M., *Secretary*.

MONTREAL VETERINARY MEDICAL ASSOCIATION.

A regular meeting of the Association was held on Thursday evening Nov. 7, 1895, with the Honorary President, Dr. D. McEachran, in the chair.

The minutes of the previous meeting having been read and adopted, a case report by Mr. J. H. Patterson was presented for diagnosis.

The animal in question was a bay horse, five years old, weight 1,000 lbs. When called to see the case, found the animal in a recumbent position, unable to rise. Temperature 100.5°, pulse 46, respiration 12. When assisted to his feet,

* These papers will be published in the April REVIEW.

moved without difficulty and seemingly all right. The next day he was down again; was raised and placed in slings and received a laxative, followed by nerve tonics. In twenty-one days was sent home with no abatement of the symptoms. Was put to work, which he performed satisfactorily, but every morning had to be assisted to his feet. Some three months after he fell on the pavement, and being unable to rise was shot by a policeman. No post mortem was held, but it was the consensus of opinion of those present that the difficulty in rising was due to ankylosis of some of the vertebræ.

Mr. John Greer contributed a lengthy but carefully prepared paper on "Diagnosis and General Symptoms of Disease."

A prolonged discussion ensued on the subject of variations of the pulse in different animals and in those of the same species.

Dr. D. McEachran addressed the meeting on the subject of coughs as symptomatic of disease, with special reference to the horse.

Dr. M. A. Dawes, of the Health Department, followed with some good advice to the experiment committee.

The essayists for the next meeting were then notified, and the meeting adjourned. HARRI H. DELL, *Sec.-Treas.*

A regular meeting of the Montreal Veterinary Medical Association, was held in the library on December 5, 1895. The president, Dr. M. C. Baker, occupying the chair. The roll-call showed a good attendance of members and visitors. The minutes of the previous meeting were read and approved.

A report was received from the experimental committee on some experiments with pilocarpine and eserine, the combination not having proven satisfactory in the cases under observation.

Mr. Chas. H. Higgins, B.S., presented a paper on "Bacteriology and its Practical Applications." He gave an extended historical resume of the development of bacteriological science, which development was largely due to the discovery and subsequent improvement of the microscope. The theories of immunity advanced by various investigators were each in turn enumerated and the fallacies of several were clearly demonstrated. Many interesting topics arose out of the discussion which followed, among them being inspection of milk and the propagation of tuberculosis; tuberculin and mallein, and the dosage of each.

Mr. John Greer reported a case of "Septic Aspiration Pneumonia" in a cow. The first symptom noticed was dimin-

ished lactation. Soon a swelling appeared on the left cheek over the region where Steno's duct discharges into the buccal cavity. This swelling increased until there was occlusion of the lachrymal duct and a bulging of the eye from the orbit.

Actinomycosis was suspected, but microscopic examination of the purulent matter in the swelling failed to verify the suspicion. Febrile symptoms developed, accompanied by chills, weak pulse, depression and diarrhœa, death occurring about four weeks after the first appearance of the swelling. The post mortem revealed a large abscess from the inferior maxilla with softening and necrosis of the adjacent tissues. The lungs contained multiple abscesses due to the inspiration of septic germs from the primary abscess of the jaw. A pneumonia had developed in addition. The term "Septic Aspiration Pneumonia" was very appropriate.

In Mr. Greer's opinion, which was concurred with by those present, had the original abscess been recognized early and subjected to proper treatment, the animal would have made a good recovery.

The case was an interesting one, and gave rise to considerable discussion.

The essayist for the next meeting was appointed, also a member to serve on the experimental committee.

HARRI H. DELL, *Sec.-Treas.*

A regular meeting of the Montreal Veterinary Medical Association was held in the library on December 19, 1895, the Honorary President, Dr. D. McEachran, in the chair.

Owing to the proximity of the holiday season the attendance was somewhat less than usual. The minutes of the previous meeting having been read and confirmed, Mr. C. H. Higgins requested that the Secretary be instructed to secure for the library the Experiment Station Record, also the reports of the Bureau of Animal Industry of the U. S. Department of Agriculture.

Mr. J. Anderson Ness, on behalf of the 1896 Journal Club, reported some interesting and successful experiments with barium chloride* as a therapeutic agent in the treatment of colic. Observations on several cases were reported in detail, which added interest to the report.

Mr. Fred. W. Kee then presented a paper, "Actinomycosis Bovis." Inasmuch as the disease is either increasing or is more promptly recognized than formerly the choice of the subject was

* Published elsewhere in this number.

a fortunate one, and the essayist dealt with the matter in a most pleasing manner. Particular emphasis was directed to the fact that many diseased animals which would be rejected as unfit for food in the larger cities, where a system of veterinary inspection exists, are nevertheless placed upon the markets elsewhere, and ultimately find their way into the food supply. A lengthy discussion followed the reading of the paper, the essayist ably defending his position.

Dr. Adami favored the meeting with some remarks on the nature of the disease in man, while Dr. McEachran then referred to the disease as manifested among range cattle in the Northwest.

Mr. E. H. Morris reported a rare case of surgical interference. Called to see a colt which, as the result of an accident, had lacerated one of the carotids,* he applied a ligature to the vessel and eventually was rewarded by a complete recovery, the nutrition of the area supplied by the vessel being effected by the collateral circulation.

Members were appointed to serve on the experimental committee, the essayist for the next meeting notified, and adjournment took place.

HARRI H. DELL, *Sec.-Treas.*

The Montreal Veterinary Medical Association met in the library of the Faculty of Comparative Medicine, January 15th. The chair was taken and meeting called to order by the President, Dr. Baker. Roll-call showed a good attendance of members. The minutes of the previous meeting were read and adopted.

It was decided to add to the library the Journal of the American Public Health Association and also those of the Public Health Department.

Mr. Harri Dell furnished the case report for the evening. The case was one of interest on account of its comparative rarity. The subject, an aged deerhound bitch, was brought to the hospital in a dying condition, with no history of previous illness, the only symptoms having been noticed being anorexia. Was declared by the man in charge to be well advanced in pregnancy, but physical examination revealed a large amount of fluid as the cause of distention. Death occurred during the night, and the

* Published elsewhere in this number.

post mortem brought to light the existence of extensive pathological processes.

The most worthy of notice were the presence of a large adenocarcinomatous growth of the liver, metastases in the lungs, peritonitis, and ulceration of the duodenum.

In the discussion following, Mr. Higgins stated that, curiously enough, Dr. Martin in an autopsy on a deerhound a few days previously had encountered a similar condition of the duodenum. This animal had been chloroformed on account of the existence of chorea.

Mr. S. Macnider presented a paper on "Navicular Arthritis and Neurectomy," describing the nature, symptoms and course of the disease and the indications for operation. A question as to the value of frog setons in the surgical treatment of this disease arose out of the discussion following, it being in the opinion of many of the members that if an affected animal be given the rest and hygienic surroundings that are necessary after the insertion of setons, but omitting the latter, the results would be as favorable.

Regarding neurectomy it was said to be a palliative treatment, and the feet of the animals after the operation should receive particular attention for obvious reasons.

Mr. J. J. McCarry promised a paper on post mortems, and Mr. J. Anderson Ness will furnish the case report for the next meeting. The members of the experimental committee were then appointed, and the meeting adjourned.

HARRI H. DELL, *Sec. Treas.*

WISCONSIN SOCIETY OF VETERINARY GRADUATES.

We have received a very full and interesting report from Secretary Clark of the meeting on Feb. 5th, together with the papers presented, but on account of the lateness of receipt and our crowded pages, publication is necessarily deferred until the April number.

JAMES M. REED, V.S., of Mattoon, Ill., read a paper on "Ringbone," before the meeting of the Illinois Veterinary Medical and Surgical Association, held at Decatur, Ill., Jan. 7.

CORRESPONDENCE.

PENNSYLVANIA STATE BOARD OF VETERINARY
MEDICAL EXAMINERS.

PHILADELPHIA, Feb. 7, 1896.

Editor American Veterinary Review:

DEAR SIR.—The State Board of Veterinary Medical Examiners of Pennsylvania wishes to announce that the second stated meeting for conducting an examination for applicants will be held at 3452 Ludlow Street, Philadelphia, on the third Monday in April next.

The Board would suggest to the applicant to notice the list of subjects mentioned in section 6 of the Act concerning the examination, and, if possible, to notify them previously of his intention to pass the examination.

W. H. HOSKINS, *Secretary*.

3452 Ludlow St., Philadelphia, Pa.

S. J. J. HARGER, *President*, 205 N. 20th St., Philadelphia, Pa.

AS TO THE USE OF TETANUS ANTITOXIN.

NEW YORK, Feb. 5, 1896,

Editor American Veterinary Review:

DEAR SIR.—I read in the last issue of your valued and most interesting REVIEW the report of a case of tetanus cured with the antitoxin made at the New York Pasteur Institute, said case having been treated and reported by J. S. Lamkin, D.V.S., Yonkers, N. Y. Dr. Lamkin says in this article that he came to the Institute and asked whether a dose of dry antitoxin which had been diluted two days previous could be safely used, and that he received the answer that he could make use of same without any danger. He used this stale dilution and it caused a large swelling in the neck of the horse, which had not disappeared a week later. Upon investigation I find that the assistant to whom Dr. Lamkin applied for information replied that the preparation could be safely used the same day it was diluted if it was kept "in a cool and dark place," but that no such advice was given as to lead him to inject a solution made two days before time of use. It is quite likely there was some mistake, and that the Doctor did not fully understand what was told to him. The circulars and directions which we send out with the antitoxin are such that they should eliminate all chance of injecting such a stale solution. Dr. Lamkin states that the previous injections

did not produce any evil effects, and notwithstanding the unpleasant effects resulting from this error, the animal recovered from an attack of tetanus which the Doctor thought would prove fatal, he having advised the use of antitoxin as the only chance for recovery.

With the exception of this mistake, I wish to thank Dr. Lamkin for reporting this case and to mention the New York Pasteur Institute as the source of supply of the antitoxin.

Yours sincerely, PAUL GIBIER, M.D.

SOME ERRORS IN PROOF-READING.

MAMARONECK, N. Y., Feb. 5, 1896.

Editor of American Veterinary Review:

In the February issue of the REVIEW, on page 719, Dr. W. F. Derr, in his report of a "Complicated Case," says, "I then gave him fl. ex. can. ind., half pint; fl. ex. belladonna, one ounce." Were this all I would take it that the "half pint" was an error on the part of the printer, but further on he states that "gave him one and a half pints raw oil and added half pint doses fl. ex. nux vom., every four hours." I can easily believe that the patient would survive one and a half pints of raw oil, but I am still thinking how many half-pint doses of nux vomica would have been necessary to prepare him for a post mortem. I do not wish to reflect on the REVIEW by my remarks, but I could not let that go by without some mention. I do not think Dr. Derr meant us to believe that, and therefore attribute it to the uncertainty of printers' ink.

Yours most sincerely, C. HENRY DOEPEL, D.V.S.

[The correspondent has correctly guessed the cause of the error complained of—it was the careless proof-reading of the medical reviser. The doses were indicated by the usual symbols, and were mistaken in the composing room. If any further explanation is necessary we will state that Dr. Derr wrote the dose of the fluid extract of cannabis indica as half an ounce; fluid extract of belladonna, two drachms; and of nux vomica, half a drachm.—ED.]

TREATMENT OF OSSIFIC DISEASES OF JOINTS BY HYPO- DERMIC INJECTIONS OF TINCTURE OF IODINE.

BEAVER DAM, WIS.

Editor American Veterinary Review:

An article under the above heading appeared in the April and May number of the REVIEW on page 51. After reading the article, I determined to try it when an opportunity was presented.

July 1st a three-year-old colt was brought into the hospital. He had a medium-sized bone spavin, and had been lame about

four months. The owner did not want to have the colt fired, and I decided to try hypodermic injections of tincture of iodine.

The animal was cast, and after the part was prepared four drachms of tincture of iodine were injected at four different points over and around the spavin. The directions for after-treatment were carefully followed. There was but little swelling after the operation, and in two weeks the colt was turned out.

August 17th the enlargement was more marked, and the colt was still quite lame, and the tincture was injected again. After two weeks the lameness persisted, and a strong blister of mercuric iodide was applied, and the colt confined in a single stall for three weeks.

September 28th the exostosis was fully twice as large as at the beginning of the treatment, and very lame. I then fired the colt severely.

Have not seen the case since, and do not know the final result.

W. G. CLARK, M.D.C.

PROSECUTING UNDER THE OHIO LAW.

WASHINGTON C. H., O., Feb. 13, 1896.

Editor American Veterinary Review:

DEAR SIR:—In the columns of your REVIEW in the past there has been published a full text of the law regulating the practice of veterinary medicine in this State. There has been great diversity of opinion among the members of this Association as to the utility of this law, but at the last annual session a committee on law, composed of Dr. W. H. Gribble, Dr. W. R. Howe and Dr. J. D. Fair was appointed. Said committee had David R. Dearth arrested in Dayton, Ohio, Feb. 11, 1896, charged with unlawfully practicing veterinary surgery. He was convicted and fined ten dollars and costs, the minimum fine for first offense. Other members are requested to take courage and try their hand at it, even if a test case must be carried to the Supreme Court.

W. H. GRIBBLE, *Secretary*.

OBITUARY.

Dr. Wm. T. I. McLaughlin, a graduate of the New York College of Veterinary Surgeons, occupying the position of meat inspector at the Jersey City abattoir, under the Bureau of Animal Industry, died at his residence in that city on Jan. 31, from phthisis, aged thirty-two years.

The mother of Dr. William D. Gearhart, of Pittsburgh, Pa., died at his residence in that city the 1st of February.

NEWS AND ITEMS.

W. H. GILBERT, V.S., of Leesburg, Ohio, sends the REVIEW a long article stating that he has by hard study and much experiment discovered a sure cure for parturient apoplexy. His article describes nothing that is not already known, and as his remedy is withheld, we also withhold the publication of his paper as being of no value except to announce his discovery. He promises to divulge his remedy during the present year, and we will then be pleased to accord him all the space he may require. If it is all that he claims for it his name will be unforgotten at this date in the next century.

CENSUS OF BROOKLYN HORSES.—The police force of Brooklyn has just completed a census of the horses and stables of that city, for the information of the veterinary department of the Board of Health. According to their figures there are 7,948 public and private stables and 31,580 horses, having 11,626 owners. The locations of the stables and the names of the owners will be made a matter of record in the health department, and will form the basis of a system of inspection to be made hereafter by the Health Office veterinarians. So far as is known, Brooklyn and Paris are the only cities having such an enumeration. Previous to the invasion of the trolley there were about 12,000 horses used upon the street railroads, and their substitution has considerably decreased the equine population of the City of Churches.

SIDE-LINES.—Almost every veterinary surgeon needs among his paraphernalia reliable side-lines for casting horses for various operations, especially for castration. Where to obtain them properly constructed has been somewhat embarrassing to many, and therefore we take pleasure in referring our readers to the advertisement of R. W. Elder, 121 West Penn Street, Germantown, Pa., who will send them anywhere on receipt of a very moderate price. We cheerfully recommend him and his article.

VETERINARY HYPODERMIC TABLETS.—Attention is called to the fact that the Buntin Drug Co., of Terre Haute, Ind., who have for a number of years made a specialty of supplying hypodermic tablets of the most popular alkaloids and other concentrated medicines used by veterinarians, have just issued a new and revised price-list of their goods, which they will be glad to

mail to any address upon application. The new price-list will appear in their regular advertising space next month.

COMMENCEMENT EXERCISES OF THE AMERICAN VETERINARY COLLEGE.—The graduating exercises of this college will be held this year, as for many years past, at Chickering Hall, 18th Street and Fifth Avenue, New York City, on Wednesday, March 25th, at 8 P.M.

ON January 4 last, a horse attached to a cart backed over the high cliff of the river bank of Niagara Falls, N. Y., and fell a distance of over a hundred feet. The driver reported the horse killed, but men who scrambled down found that outside of a few cuts and scratches the horse was all right. Some boards were thrown down, a temporary shelter built, and after a ten days' vacation from the cart, which the horse no doubt appreciated, he was pulled up by ropes and returned to his stable.

DOMESTIC ANIMALS OF THE NATION.—According to the Government census there are in the United States 16,893,318 horses, valued at \$36.29 per head, or \$477,730,580; mules, 24,335,108, valued at \$111,297,834; milch cows, 16,500,000, valued at \$21.87 per head, or \$363,000,000; oxen and other cattle, 34,500,000, valued at \$14.06 per head, or \$483,000,000; sheep, 42,500,000, valued at \$1.58 per head, or \$67,000,000; swine, 44,000,000, valued at \$4.97 per head, or \$219,500,000. When to these enormous figures are added the vast number of dogs (which form a source of considerable revenue to the veterinarian), the immensity of our clientage becomes apparent.

EXPORTATION OF HORSES.—A prominent Chicago horse-dealer states that a year and a half ago there were only five foreign buyers in that market, but from day to day they increased until the number during last March and April was close to fifty. And this trade is deemed to be in its infancy by competent observers.

ALBERT BABB, A.B., M.D.C., of Springfield, Mo., has had the compliment of a *verbatim* reproduction in the *Veterinary Journal* (England) of the admirable article contributed by him to a recent issue of the AMERICAN VETERINARY REVIEW, entitled "The Cæsarian Operation in the Cow."

ENGLISH HORSE TRADE.—The number of horses exported from this country during the eight months ending August 31

was 12,310, against 9,355 in the corresponding period last year, the value having been £345,024, against £290,852. There were 312 stallions, 2,519 mares, and 9,478 geldings exported. The number of horses imported was 22,755, against 15,614. In this year's figures there were 583 stallions, 6583 mares, and 15,589 geldings, the value having been £605,586, against £360,913 last year. The greater part of the increase in numbers was from the United States and Canada.—*Veterinary Journal (England.)*

GOVERNMENT VETERINARY POSITIONS.—A dispatch from Washington, D. C., dated February 14, says: The United States civil service commission will hold examinations on March 10, in Boston, New York, Buffalo, Philadelphia, Cincinnati, Kansas City, Chicago, Los Angeles and San Francisco for the positions of meat inspector, stock examiner and tagger. For all of these positions the supply of eligibles is not equal to the demand. Applicants for the meat inspector examination must be graduates of some recognized veterinary college, and applicants for the stock examiner examination must have had at least three years' experience in handling meat-producing animals.

FIRE IN A VETERINARY HOSPITAL.—On Feb. 12, fire in the veterinary infirmary of Geo. H. Berns, D.V.S., 74 Adams Street, Brooklyn, did damage to the amount of \$1,500, fully covered by insurance. The insurance patrol threw covers over his large cases of instruments and books, and they were practically unharmed. It originated from an overheated stove in the stableman's apartments.

IN the discussion of the agricultural appropriation bill before the House on Feb. 17th an amendment was adopted setting aside \$42,360 for another edition of "Special Report on the Diseases of the Horse."

J. J. MONAGHAN, D.V.S., of Holyoke, Mass., has recently been appointed veterinarian to the Fire Department of that city.

DR. U. B. SMITH, of Basil, Ohio, was elected Secretary of the Ohio State Board Veterinary Examiners at the last meeting of said Board.

DR. H. A. PRESSLER, of the Chicago Veterinary College, has located in Fairburg, Ill.

REVIEWS WANTED.

Dr. A. W. Bitting, of Purdue University, Lafayette, Ind., is desirous of obtaining Volume I of the AMERICAN VETERINARY REVIEW, for which he will pay ten dollars.

President Jno. P. Haines, of the American Society for the Prevention of Cruelty to Animals, 10 East Twenty-second Street, New York City, wishes Nos. 5 and 12 of Volume XVII., and Nos. 5 and 7 of Volume XVIII., for which twenty-five cents per number will be paid.

COMMUNICATIONS RECEIVED.

Communications are acknowledged from the following: W. V. Bieser, D.V.S., W. Chas. Covey, D.V.S., Geo. Jobson, V.S., Samuel S. Buckley, M. J. Treacy, U.S.A., W. F. Derr, V.S., Geo. G. Van Mater, M.D., D.V.S., W. L. West, V.S., J. P. Turner, U.S.A., Harri H. Dell, James M. Reed, V.S., C. W. McCracken, V.S., W. H. Gilbert, Geo. C. Faville, D.V.M., M. D. Hoge, Jr., M.D., W. H. Harbaugh, V.S., E. P. Niles, D.V.M., H. H. Rusby, M.D., Robert Robb, V.S., James A. Waugh, V.S., H. D. Fenimore, D.V.S., Roscoe R. Bell, D.V.S., L. L. Conkey, V.S., F. C. Wilkinson, V.S., W. G. Clark, D.V.S., C. H. Sweetapple, V.S., F. L. Morgenroth, M.D.C., T. W. Watson, V.S., J. R. Kelso, D.V.S., J. P. Laws, D.V.S., H. S. Perley.

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A good established veterinary practice in a city of 500,000 population, including a number of valuable prescriptions used successfully for years. Large infirmary and residence located in central part of city. Write P.O. Box 285, St. Louis, Mo., for full information.

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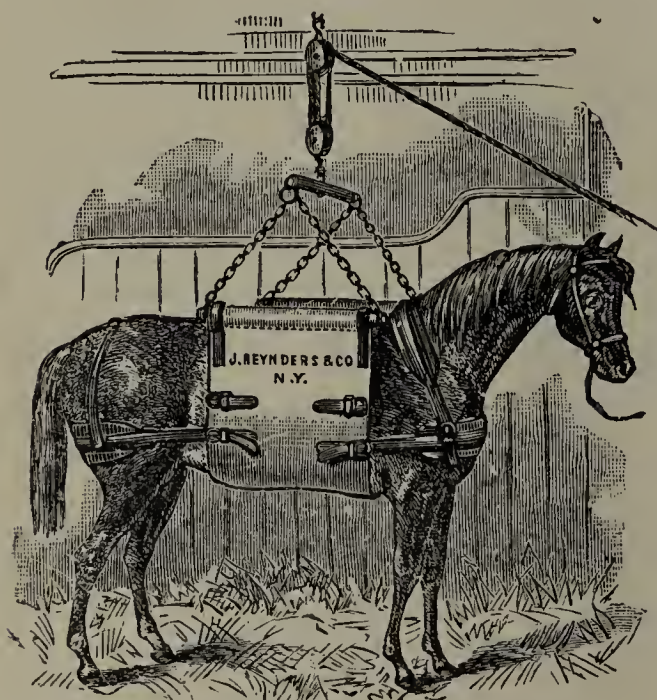
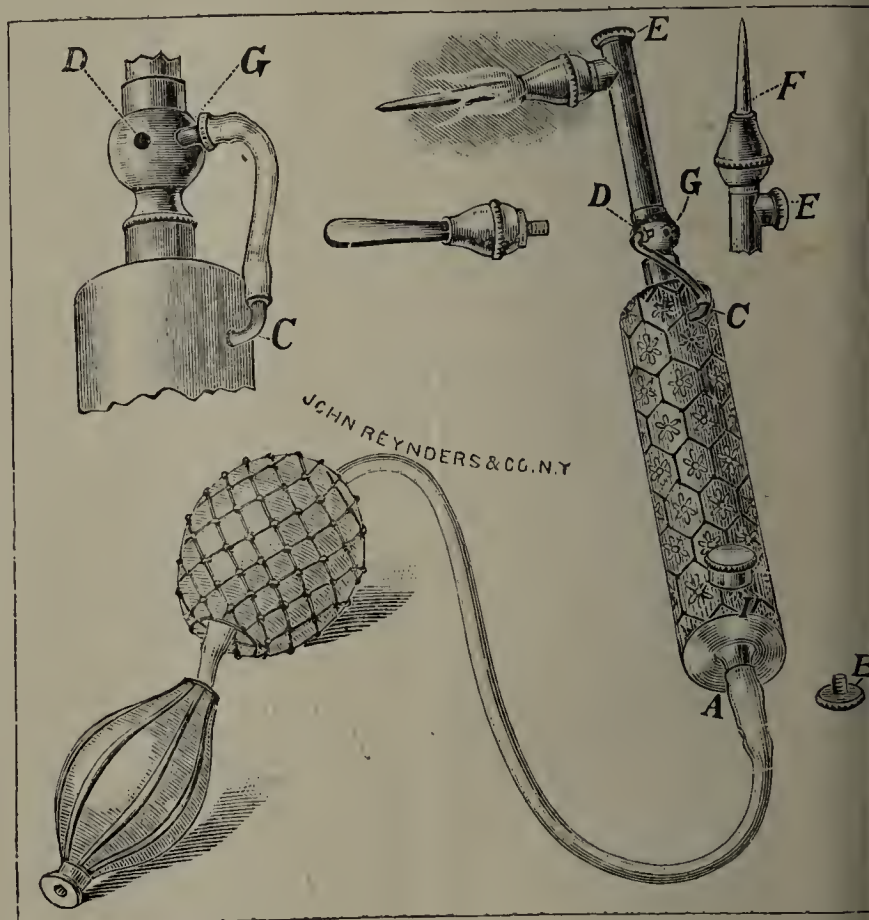
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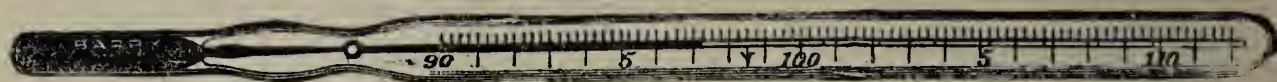
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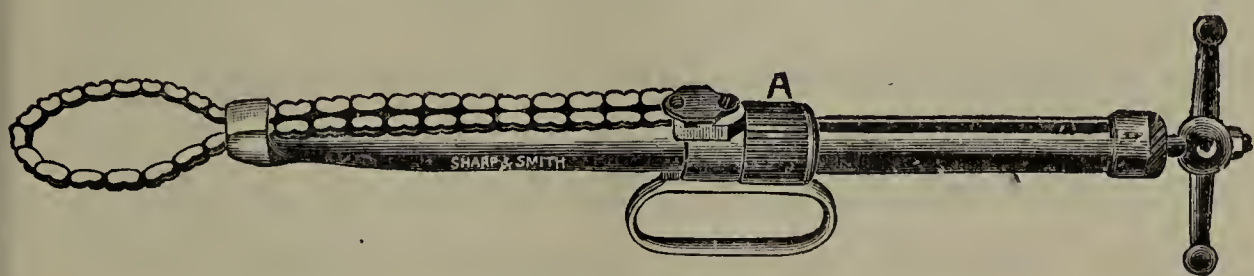
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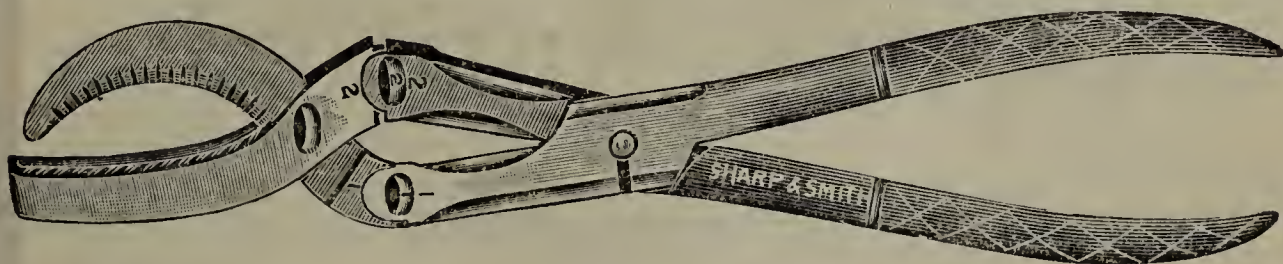
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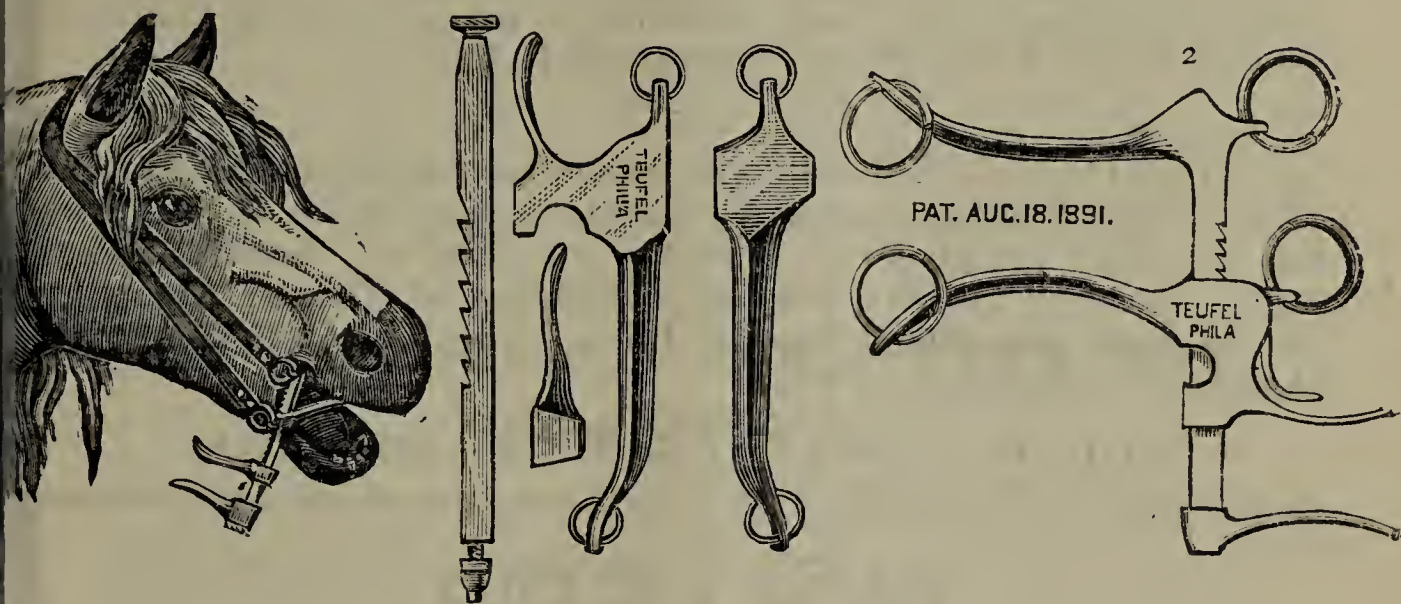
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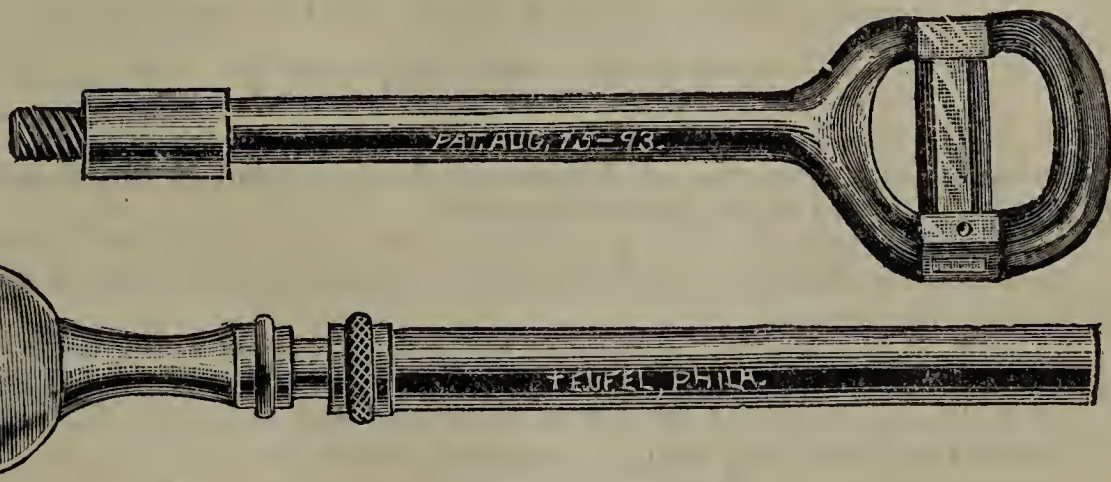
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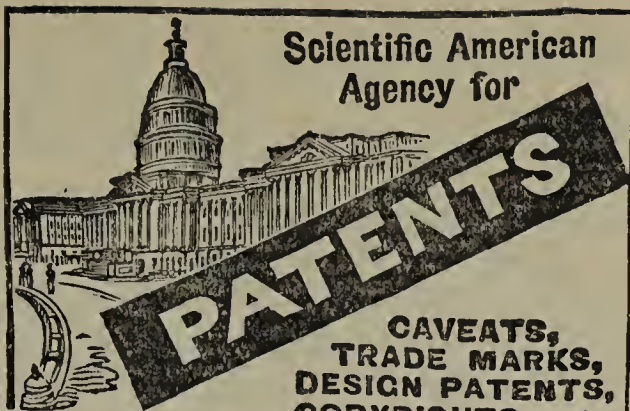
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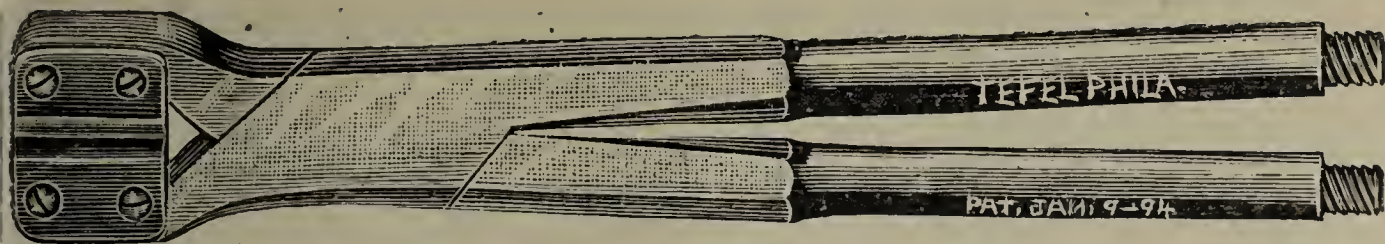
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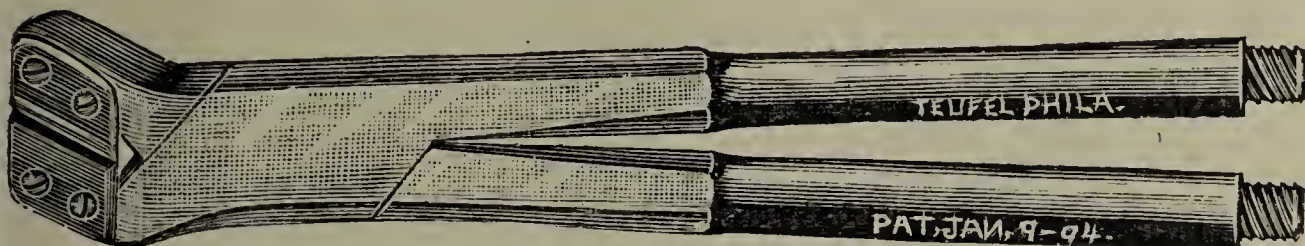
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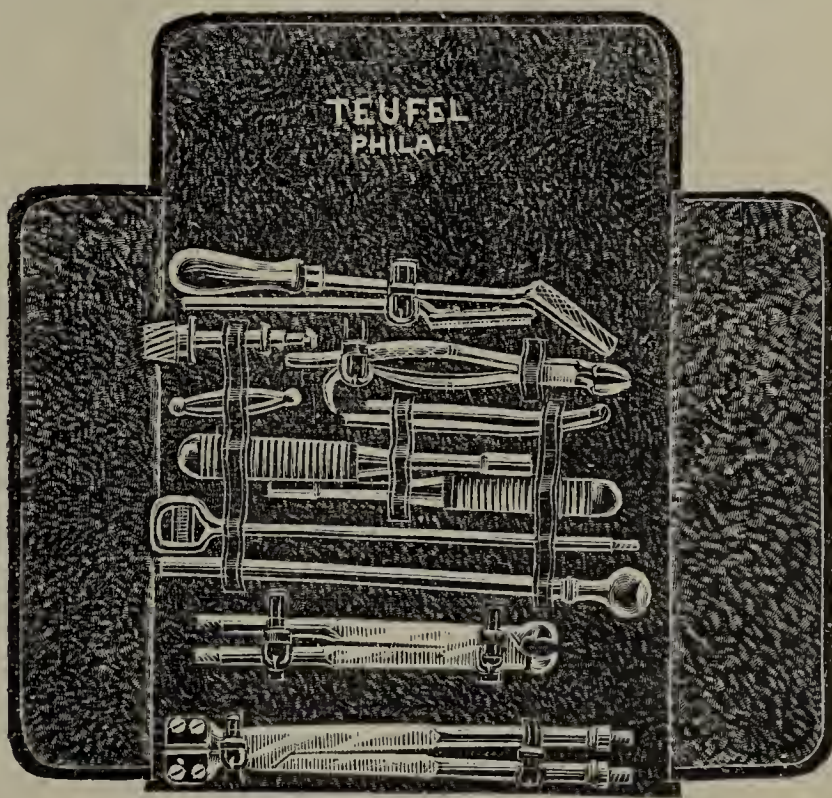
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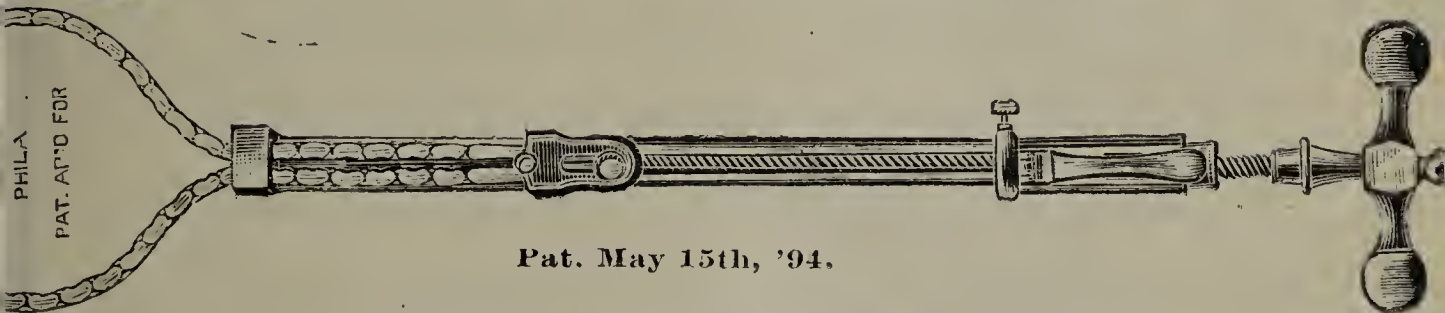
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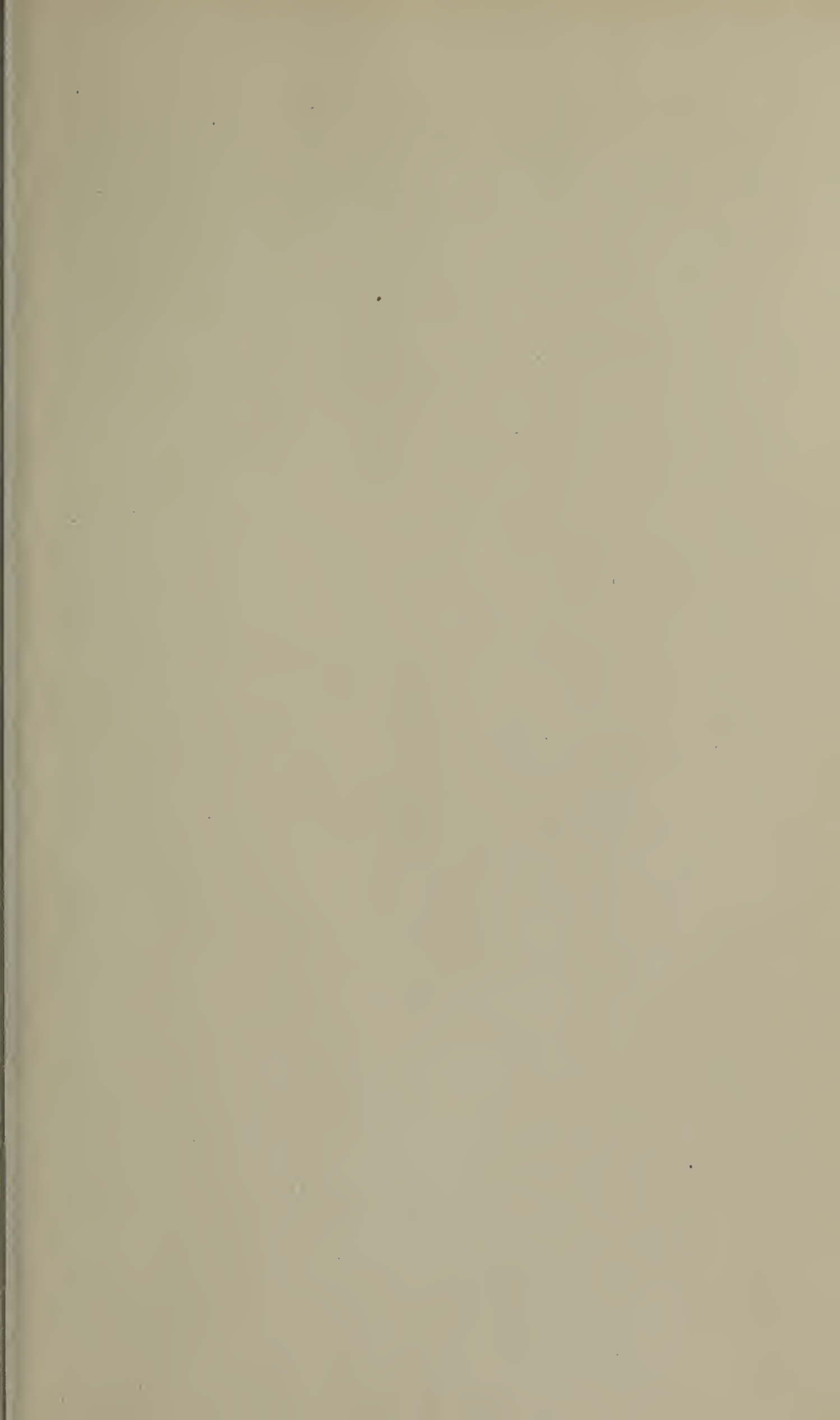
W. R. GRUTZMAN,
Assistant House Surgeon.

J. E. RYDER, D.V.S.,

H. D. HANSON, D.V.S.,
Visiting and Clinic Veterinarians.

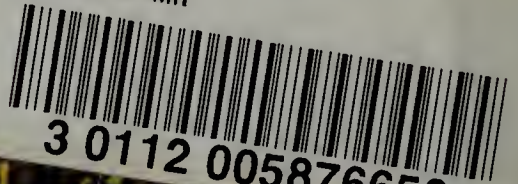
H. NEHER, D.V.S.,

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